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ABSTRACT

A series of interventions was conducted with eight teachers in two elementary schools to determine the extent to which students' academic responding time could be increased. Teachers participated in one of two conditions: (1) inservice training on the importance of academic responding and ways to increase it; and (2) consultation feedback in addition to inservice training. Results were variable across the two schools, but generally indicated that academic responding time could be increased significantly through teacher interventions, with some classrooms more than doubling their academic responding time. Further, there was no clear trend indicating superiority of either inservice alone or inservice plus feedback consultation in helping teachers increase their students' academic responding time. Discussions of the effects of the interventions are provided by principals of the two participating schools. Items appended include examples of: handouts; observation feedback summary data; forms summarizing feedback consultation meetings; and tables of percent of academic responding times of individual classes. (Author/JMK)

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Research Report No. 139

HELPING TEACHERS INCREASE THE TIME THEIR STUDENTS SPEND IN LEARNING

Janet L. Graden, Barbara M. Clobes Berquist, and Charles W. Burnside

IRLD

Institute for Research on Learning Disabilities

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September, 1983

Abstract

A series of interventions was conducted with eight teachers in two elementary schools to determine the extent to which students' academic responding time could be increased. Teachers participated in one of two conditions: (a) inservice training on the importance of academic responding and ways to increase it, and (b) consultation feedback in addition to inservice training. Results were variable across the two schools, but generally indicated that academic responding time could be increased significantly through teacher interventions, with some classrooms more than doubling their academic responding time. Further, there was no clear trend indicating superiority of either inservice alone or inservice plus feedback consultation in helping teachers increase their students' academic responding time. Discussions of the effects of the interventions are provided by principals of the two participating schools.

Helping Teachers Increase the Time Their Students Spend in Learning

The fact that students currently spend only a small portion of the school day engaged in actual academic responding behaviors has been well documented by previous research (cf. Graden, Thurlow, & Ysseldyke, 1983a; Hall, Delquadri, Greenwood, & Thurston, 1982; Rosenshine, 1980). Generally, it has been reported that students average about 45 minutes of a typical six hour school day engaged in academic responding (Graden et al., 1983a; Hall et al., 1982; Thurlow, Graden, Greener, & Ysseldyke, 1983). Yet, the importance of increasing academic responding time has been highlighted because of the demonstrated positive relationship between time engaged in academic responding and student achievement (cf. Borg, 1980; Graden, Thurlow, & Ysseldyke, 1982). The area of academic engaged time as an important variable of intervention has been addressed by Bloom (1980), who states that academic responding time is a positive direction for education because time is an "alterable variable." Further, research on effective teaching has consistently identified student time engaged in academic responding as an important variable characterizing effective instruction (cf. Anderson, Evertson, & Brophy, 1979; Good, 1979; Ruff, 1978).

Some intervention studies have been undertaken in attempts to increase student academic engaged time. The Beginning Teacher Evaluation Study (BTES), a major study of student academic engaged time (cf. Denham & Lieberman, 1980) has resulted in several small scale intervention efforts. The BTES report included discussions of intervention attempts by a classroom teacher (Muir, 1980) and an

elementary school principal (Noli, 1980). Both reported that they were able to increase academic engaged time by implementing several strategies, such as increasing allocated instructional time, providing more direct instruction to the entire class, and reducing transitions and interruptions. These reports focused on describing the process of implementation; actual results in terms of the magnitude of change in academic engaged time were not given.

Others involved in the BTES research provided models of implementing interventions to increase academic engaged time. Fisher, Marliave, and Filby (1979) presented a model of staff development based upon on-going observation and consultation with teachers regarding their students' engaged time. Berliner (1978, 1982) proposed a similar model, highlighting the importance of involving teachers in the process and employing a collaborative model to generate specific strategies for intervention with teachers. In his 1978 report, Berliner demonstrated through a time series design study of 25 classrooms (11 intervention, 14 control) that academic learning time was about six minutes per day higher in experimental classrooms. In this study, four teachers attended workshops and seven also received specific consultation. Berliner reported that while both groups improved, teachers attending workshops exhibited greater change in their classrooms' academic learning time.

Additional studies also have demonstrated positive changes as a result of teachers' interventions to increase academic responding time. Hall et al. (1982), using a single subject research design, demonstrated that academic responding time could be improved through

strategies such as tutors (cross-age, grandparent, parent) and increasing practice time. Bergan and Schnaps (in press) applied the explicit behavioral consultation format of Bergan (1977) to identify and set goals regarding improving academic engaged time with four teachers. Results regarding improvement of academic engaged time were mixed, and they concluded that an important variable was the success of the consultant in eliciting relevant, explicit goals for improvement from teachers.

The current intervention study was directed at applying previous IRLD research findings to determine the extent to which academic responding time could be increased by teachers. A collaborative school-based model of applying research knowledge to meet school and teacher needs was employed. All interventions were planned and provided conjointly by an IRLD researcher and school district personnel. The study was aimed at addressing the effectiveness of inservice alone compared to inservice plus feedback consultation in helping teachers increase students' academic responding time.

Method

Subjects

Eight teachers in two elementary schools participated in the intervention and observation project. In each school, the building principal selected four teachers from among those volunteering to participate in the project. Of the four teachers in each school, two attended inservice presentations; classroom observations followed the inservices to monitor their students' academic responding time. The other two teachers in each school attended the same inservice

presentations and their classrooms were observed following the inservices; additionally, they received feedback consultation based on the classroom observation results. Thus, across both schools, four teachers participated in the treatment condition of inservice only, and four participated in the treatment condition of inservice plus feedback consultation.

Six of the teachers taught in the primary grades (first through third) and two taught in the intermediate grades (fourth through sixth). Seven teachers were female. All of the teachers had over 5 years of teaching experience, with the highest years of experience being 25 years.

Observation System

A modification of the CISSAR (Code for Instructional Structure and Student Academic Response) observation system (Greenwood, Delquadri, & Hall, 1978) was used in this study. The CISSAR observation system is directed at observing a target student over the entire school day and recording the instructional ecology and student response in 10-second intervals. The following six event areas are recorded: (a) activity (12 codes), (b) task (8 codes), (c) teaching structure (3 codes), (d) teacher location[1] (6 codes), (e) teacher activity (5 codes), and (f) student response (19 codes). Seventeen stop codes also were used to record reasons for termination of observation. The definitions of the event areas and specific events recorded within each area are summarized in Table 1.

Insert Table 1 about here

For this project, changes were made in two of the student responding codes and in the method of observing students. Based on previous IRLD studies employing the CISSAR system and concerns of teachers that "attending" was too broad a category encompassing both academic (e.g., listening) behaviors and non-academic (e.g., waiting) behaviors, a change was made in the "attending" (AT) category. In the current study, attending was coded when the observer could see the target student's eyes on the teacher, on another student who was talking in a discussion, or on the assigned task. Another category, self-stimulation (SST), was dropped since it was very infrequent in previous studies (occurring less than 30 sec per day; see Graden, Thurlow, & Ysseldyke, 1983a). The SST code was redefined as the "wait" category and was used to incorporate waiting behaviors and "dead" time when the target student was not engaged in any observable academic behaviors or inappropriate behaviors. Examples of behaviors in this category would be the student waiting at his/her desk between tasks or waiting in line.

A second change implemented in the observation system was in the method of observing students. Because the focus of this project was on the academic responding time of an entire classroom, rather than observing one target student over an entire school day, a system was used for randomly observing all students in the classroom. After pilot-testing several methods of alternating target students, a system

was adopted in which a different target student was observed at the end of each coding block (every 70 sec). Observing students for 70 seconds each was determined to be sufficiently long enough to obtain an accurate picture of each student without spending an inordinately long period observing any one student at one time. Observing any single student for a longer period of time was judged to contribute to a potentially skewed classroom average. Additionally, changing students every block had the added advantage of being convenient for observers to remember. The rotation of target students every 70 seconds was conducted by adopting a systematic method of selecting students for observation, such as moving down rows from the front or back, across rows, or around a circle. Observers were instructed to select a method that was best applied to a particular classroom arrangement and to apply that observation strategy systematically throughout the day.

An interval time sampling technique was used to direct the recording of events in 10-second intervals over the entire school day while the students were in the classroom. Coding was structured into consecutive blocks of seven 10-second intervals. During the first 10-second interval, activity, task, and teaching structure were recorded. During each of the next six 10-second intervals, teacher location, teacher activity, and student response were recorded. This pattern was maintained throughout the observation, with observers switching to a new student every 70-second block.

An auditory electronic timer attached to a clipboard was used to signal the 10-second intervals. The timer was equipped with an

earplug so that only the observer could hear the signal (a short beep sound). The clipboard was used to hold coding sheets and to provide a hard surface for marking events.

The coding sheets, modeled after those used by the Juniper Gardens Children's Project (Stanley & Greenwood, 1980), were designed at Minnesota's IRLD to be read automatically by an optical scanner. In addition to spaces for coding classroom identification and start and stop times, each sheet contained three blocks representing 70 seconds each. Each completed sheet represented 3.5 minutes of observation time.

Observers

Seven individuals served as observers. These observers previously had been trained in the CISSAR system by IRLD staff members and had participated in a year-long study employing the system. The observers were all females who initially had been selected from a pool of 50 female applicants who responded to an ad in a local newspaper. To minimize biases that might be brought to the classroom setting, a prerequisite for consideration was that the applicant not have a background in education. Additional selection criteria included at least average reading ability and performance on selected parts of a general office skills test. A personal interview with an IRLD staff member comprised the final step of selection.

Procedures

Observer training. Observers were retrained in the use of the CISSAR observation system over two half-day sessions. Retraining consisted of review of CISSAR codes and definitions and instruction in

changes in the system. The Observer and Trainer's Manual developed by Stanley and Greenwood (1980) was employed for the retraining. The manual presented eight units covering codes, definitions, observation procedures, recording procedures, and reliability coding. Exercises and quizzes are presented throughout the manual. Observers were required to demonstrate mastery (100%) on all unit tests on codes and definitions before observing in the classroom. Observers practiced in the classroom for one day before conducting classroom observations for the study.

Retraining was conducted by an Institute staff member who had conducted the previous training. Previous training of the observers consisted of two weeks of half-day training sessions using the CISSAR manual, mastery (100%) on all tests, and two to three days of classroom practice.

Interventions. In each of the elementary schools, the same basic pattern of intervention and post-intervention observation was followed. First, baseline observations were conducted in each of the eight classrooms to establish a sample of average academic responding time for students prior to any interventions. Next, a series of inservice presentations was conducted in each school throughout the school year focusing on different topics related to improving academic responding time with an emphasis on reading instruction. After each inservice, observations were conducted in all participating classrooms, and teachers in the feedback group then received feedback consultation regarding the time their students were engaged in academic, task management, and inappropriate responding during the

observed days. Using the observation data, consultation was provided jointly by an IRLD staff member who was also an intern in the school district and a building LD teacher to develop strategies with the teachers to improve their students' academic responding time.

The actual sequence of events and content of inservices differed slightly in the two schools in order to accomodate differing schedules and school needs. Inservices were planned cooperatively by school personnel (e.g., principals, consulting LD teacher, regular classroom teachers) and the IRLD staff member/intern. The rationale was to provide relevant inservice to each building by including school personnel in the planning and delivery of inservice and consultation. Additionally, the inclusion of school personnel was considered essential in providing for continued follow-up of interventions. The sequence of events is represented in Figure 1.

Insert Figure 1 about here

In School 1, a total of four inservice presentations were conducted throughout the year. The first of these was a general presentation by the IRLD staff member/intern highlighting theoretical underpinnings of the concept of academic engaged time, the relation of the classroom ecology to student engaged time, and general principles of effective teaching relative to academic engaged time. The second inservice, provided by two building teachers, highlighted methods to increase opportunities for more students to respond simultaneously and to provide for multiple responses among students. The third

inservice, provided by the IRLD staff member/intern and three building teachers, focused on management strategies to keep all students actively engaged during independent work time. The final inservice, conducted by the IRLD staff member/intern, was designed to provide for sharing of ideas teachers had tried throughout the year that they believed improved academic engaged time. Additionally, follow-up plans for the next school year were made, including a committee to plan future inservices and to develop materials to aid in enhancing multiple student responding. With the exception of the third inservice, which was conducted on a teacher-release inservice day, all other inservice presentations were conducted on a volunteer basis for 45 minutes prior to the school day.

In School 2, the first inservice was conducted by the IRLD staff member/intern and building principal; it focused on strategies to increase opportunities to respond through unison and multiple responding techniques. In contrast to School 1, a decision was made not to provide a general theoretical session on underlying principles since it was felt that teachers preferred the practical to the theoretical. The second inservice was provided by the IRLD staff member/intern on academic and management strategies to increase students' academic engaged time. The final inservice was conducted in two simultaneous sessions: primary teachers attended a session on increasing academic engaged time in reading that was conducted by the building reading teacher and the IRLD staff member/intern; intermediate teachers attended a session conducted by the building principal and a building intermediate teacher focusing on using an

outlining technique to help students increase academic responding during teacher lectures. Again, all inservices except the second were conducted for volunteer teachers in the 45 minutes before school; the second inservice was held in conjunction with a teacher-release inservice day.

Various resources were used to plan the inservice presentations, including research on academic engaged time (e.g., Fisher, Berliner, Filby, Marliave, Cahen, & Dishaw, 1980; Hall et al., 1982), previous IRLD research on the relationship of classroom ecology to students' academic engaged time (cf. Graden, Thurlow, & Ysseldyke, 1983b), research on effective teaching (e.g., Anderson et al., 1979; Good, 1979; Good & Grouws, 1977), readings on translating theoretical principles into teaching (e.g. Hunter, 1979, 1980), and prior intervention efforts to increase academic engaged time (e.g., Berliner, 1978; Bergan & Schnaps, in press; Muir, 1980; Noli, 1980). Examples of handouts used in the inservices are included as Appendix A.

Feedback consultation in both schools was provided by the intern and a building LD teacher using the models of Bailey and Morrill (1980) and Berliner and his BTES colleagues (Berliner, 1982; Fisher et al., 1979). In the consultation sessions, observation data were reviewed, areas of intervention to increase academic responding time were identified, and specific strategies to increase students' academic responding were discussed. An example of a summary of observation data provided to teachers and examples of the completed forms for summarizing the consultation meetings and for documenting the interventions tried are included as Appendices B, C, and D.

Data collection. Observers coded in each of the participating classrooms for two entire school days at each phase of the intervention process. The decision to collect two days of data at each phase of intervention was based on stability analyses presented by Greenwood, Delquadri, Stanley, Terry, & Hall (1981), in which it was reported that one day of observation predicted 92% of the variance for student response. However, in School 1, only one day of baseline data was collected due to time constraints, and only one day of observation was conducted in one classroom following the final intervention due to difficulties in scheduling caused by observer illness, a snow day, and scheduled school programs and field trips.

Days of observation were planned with the teachers in accordance with their schedules in order to avoid days with special programs, days prior to or just following vacations, etc. Thus, the teachers knew in advance the days of observations and planned to implement interventions on these days.

During the scheduled days of observation, the observers coded the entire time that students were in the classroom with the regular classroom teacher. Because of natural breaks in the school day (e.g., recess, bathroom breaks, lunch), observers typically did not code continuously for a period of more than 2 hours. Also, observations were not conducted during breaks, such as those for lunch, recess, and bathroom. Since the focus of the observations was on students' responding with the classroom teacher, observers did not code during instruction with other teachers (e.g., physical education, art, or music). Observers did follow teachers and their students for

instruction in other settings when the regular classroom teacher provided the instruction (e.g., library, filmstrips in other classrooms).

Reliability. Reliability checks were conducted throughout the study to detect any inconsistencies in coding among observers or between an observer and the established code definitions and observation procedures. The reliability checks were conducted between observer pairs or between an observer and the intern. A reliability observer entered the classroom and coded for approximately 14 minutes (4 pages of observation). During the study, 16 reliability checks were conducted.

Reliability was checked for each of the categories of observation and totals were calculated across all event areas. Reliabilities were calculated according to the formula of number of agreements divided by total agreements plus disagreements. According to the CISSAR manual, the desired levels of reliability were 90% for student behavior and 85% for total reliability. Average levels of reliability obtained in this study exceeded these levels. Table 2 is a summary of the reliabilities obtained during the present study.

Insert Table 2 about here

In order to maintain adequate levels of reliability throughout the study, areas of disagreement were noted during reliability checks and meetings were held with observers at each phase of observation to discuss issues raised in observations and to resolve areas of disagreement in observation procedures.

Results

Results are summarized and highlighted across each phase of intervention in each classroom for (a) total daily minutes of student academic responding, (b) total percent of class time that students were engaged in academic responding, (c) total daily minutes of student academic responding during the reading period, and (d) total percent of the reading period that students were engaged in academic responding. Results are presented both in minutes of academic responding and percentage of academic responding to allocated time to highlight both the actual amount of time of academic engaged responding and the proportion of allocated instructional time that was actually engaged in academic responding.

Baseline

In School 1, the total daily academic responding time ranged from 17.8 to 34.2 minutes (see Figure 2) and in School 2, the total daily student academic responding time ranged from 19.8 to 56.8 minutes (see Figure 3). Average percent of academic responding in the total instructional day was similar across both schools, ranging from 12% to 21% in School 1 (see Figure 4) and from 10% to 26% in School 2 (see Figure 5).

Insert Figures 2 - 5 about here

Minutes of academic responding during reading instruction at baseline in School 1 ranged from 7.7 to 27.3 minutes (see Figure 6), while baseline minutes of academic responding during reading in School

2 ranged from 5.8 to 14.7 minutes (see Figure 7). Percentages of academic responding time during allocated reading instruction varied dramatically within both schools. In School 1, percent of time engaged in academic responding during reading ranged from 11% to 38% (see Figure 8). A similar range (8% to 37%) was demonstrated in School 2 (see Figure 9).

Insert Figures 6 - 9 about here

During other subject areas, which were not the focus of specific intervention efforts, the percent of academic responding time to the total allocated time often varied greatly. These times are included in Tables 1-8 in Appendix E. Across the two schools during the baseline period, the percent of academic responding during math ranged from 19% to 45%, in spelling from 25% to 45%, in handwriting from 23% to 61%, in social studies from 5% to 31%, and in science from 1% to 37%.

Intervention Phase I

School 1. In this school, the first intervention was comprised of a general inservice presentation on principles of effective instruction and the effect of instructional ecology on academic engaged time. Additionally, two teachers received their baseline observation data and developed intervention strategies based on this observation feedback. Results of observations following this first phase of intervention revealed moderate increases both in minutes of academic responding and percent of academic responding in the

inservice plus feedback classrooms (see Figures 2 and 4). In the inservice only classrooms, levels of academic responding both in actual minutes and in percentages either remained similar to the baseline period or declined. It should be noted, however, that for all classrooms in School 1, only one day of baseline data was collected; thus the baseline data are less stable than the data from the first intervention phase.

During reading instruction, the minutes and percent of academic responding time increased moderately in three classrooms (both inservice plus feedback classrooms and one inservice only classroom) (see Figures 6 and 8). A marked decline was demonstrated in the remaining inservice only classroom in both minutes and percent of academic responding during reading.

During this phase of intervention, all teachers reported using similar intervention strategies. Teachers noted that they had become aware of the impact of classroom ecology variables, such as teacher location and selection of tasks, on student academic responding and had implemented changes aimed at enhancing student responding. Additionally, teachers noted that they had become aware of the impact of disruptions and classroom interruptions on student academic engaged time and had made efforts to decrease these interruptions. Teachers who received feedback on their observation data had the added opportunity to actually see the impact of transitions and disruptions on their students' academic responding time.

School 2. Different results were evident in School 2 following the first phase of intervention. Compared to the general, theoretical

inservice in School 1, the first inservice presentation at this school had a more specific, practical focus emphasizing methods and strategies to allow more than one student to respond at a time. These strategies, summarized in Appendix A, included using choral reading, chalk slates for multiple responding among students, and guided practice in completion of worksheets.

Results following this first intervention phase in School 2 revealed moderate to significant increases in minutes and percent academic responding in the two classrooms that received only inservice (see Figures 3 and 5). One classroom exceeded a level of 40% of the total class day engaged in academic responding compared to baseline rates of 19% to 26%. Both of the feedback plus inservice classrooms demonstrated more variable results in minutes and percent of academic responding over the instructional day.

The changes in academic responding during reading were marked in two classrooms, one inservice only classroom and one inservice plus feedback classroom (see Figures 7 and 9). These classrooms were both intermediate grades. The minutes of academic responding during reading instruction increased in one classroom (inservice only) to about 37 minutes, compared to about 15 minutes at baseline. The percent of academic responding during reading in another classroom increased from 31%-37% at baseline to 56%-73% after the first inservice. This teacher reported using multiple responding techniques and a daily silent reading period.

Other interventions reported by teachers during Phase I in School 2 included the use of multiple responding techniques, such as response

cards and student signals, chalk slates, decreasing transition times, and consolidating several bathroom breaks into one scheduled time. One teacher focused on decreasing interruptions and inappropriate behavior in order to try to increase opportunities for academic responding.

Intervention Phase II

School 1. Following the second phase of intervention, consisting of an inservice workshop on strategies to increase multiple student responding, observation results indicated generally sustained levels of total academic responding minutes in most classrooms (see Figure 2). Both classrooms in the inservice plus feedback condition continued to exceed baseline levels for total minutes of academic responding time, although times did not reach levels attained during the first intervention phase. Minutes of academic responding in these two classrooms ranged from about 24 to 46 minutes in this phase compared to 18 to 34 minutes during baseline.

In classrooms receiving inservice without feedback, there also were general increases in total daily minutes of academic responding. One classroom reached its highest level of academic responding during this phase of intervention, reaching about 49 minutes of academic responding compared to 28 minutes at baseline. The other classroom, however, did not reach baseline levels of minutes of academic responding.

Similar results were seen with regard to the percent of academic responding over the total school day (see Figure 4). Again, one classroom reached its highest level of percent of academic responding

demonstrated in any phase of intervention. In this classroom, total percent of academic responding reached 36%, compared to previous levels ranging from 18% to 22%.

Ranges of minutes of academic responding during reading instruction generally continued at previous levels (see Figure 6). The percent of academic responding during reading increased dramatically on Day 4 in two classrooms. Percent of academic responding reached 44%, compared to previous levels from 17% to 28%. This gain was followed by a decline on Day 5 in both classrooms, ranging from 26% to 35%.

Specific interventions implemented in classrooms during this phase of intervention focused on using multiple responding techniques to increase opportunities for academic responding. In the classrooms exhibiting large gains in percent of responding during reading instruction, specific strategies were implemented such as providing a silent reading time and using techniques to allow students to respond simultaneously rather than one at a time. In two other classrooms, peer reading programs were implemented. Other strategies that were less focused and more general were implemented in all classrooms. Examples of these general strategies were decreasing transition times and reducing outside interruptions to the class.

School 2. During the second phase of intervention in this school, large increases in academic responding time were seen in most classrooms. Intervention at this phase consisted of a full-day inservice on various topics, incuding academic and management strategies to increase engaged time and a session on effective reading

instruction. Classroom observations following this workshop revealed generally high levels of academic responding, with all classrooms reaching the highest levels of minutes of academic responding demonstrated for any intervention phase, although one classroom also exhibited variability that dropped near baseline levels (see Figure 3). Total minutes of academic responding reached classroom high levels of about 84 minutes, 79 minutes, 59 minutes, and 42 minutes during this intervention phase. Additionally, the classroom exhibiting 84 minutes of academic responding achieved the highest level of academic responding demonstrated by any classroom throughout the study. This classroom was in the group receiving only inservice with no feedback consultation.

Similarly high levels of percent of academic responding were seen for most classrooms during this phase (see Figure 5). The same classroom exhibiting the highest number of academic responding minutes (84 min) also exhibited the highest daily percentage of academic responding in the total school day (46%). This daily high of 46% can be compared to 18% to 26% levels at baseline. Total academic responding minutes during reading instruction also attained high levels in all classrooms during this phase of intervention (see Figure 7). Compared to baseline levels of about 6 to 15 daily minutes of academic responding during reading instruction, classrooms reached high levels from about 23 to 36 minutes. One classroom receiving both inservice and feedback consultation increased from previous levels of academic responding of 8 to 13 minutes to a high of 27 minutes.

Large increases also were seen in the percent of academic responding during reading (see Figure 9). A gradual increase was seen

across Intervention Phases I and II, with most classrooms reaching their highest percent of academic responding in reading during Phase II. One classroom reached a high of almost 70% of reading time spent engaged in academic responding, compared to 24% to 27% at baseline. The two primary classrooms increased from about 8% to 17% at baseline to high levels of 40% to 47% during Phase II.

Several interventions were reported by teachers as being implemented during this phase of the project. First, all classrooms within the school implemented a silent reading period each day during which all students and teachers engaged in silent reading. The two teachers receiving feedback consultation implemented several interventions during their reading periods to manage their three groups during that time. Both teachers implemented procedures to increase on-task behavior of students engaged in seatwork while the teacher worked with another group. Examples of interventions included assigning a peer helper to answer questions, giving explicit directions to groups before releasing them to seatwork activities, and assigning specific activities to complete in a specific time (e.g., complete worksheet for 10 min, read along with story tapes for 10 min). During the time that teachers worked with the group directly, they implemented various strategies to keep students on task and to enhance academic responding. For example, they called on students in a random pattern to keep students' attention, and they used strategies for multiple responding such as choral reading from the reader and unison responding during direct instruction and drill.

The two teachers who attended inservice without receiving feedback consultation reported using other strategies. The teacher

whose classroom achieved the highest levels of academic responding reported several interventions, including use of "filler" activities during transition time (e.g., having a short, fun assignment for students to complete as they arrived in the morning or between activities). This teacher also significantly increased the amount of time devoted to silent reading. Additionally, students were provided with activities to keep them on task when other activities were completed, and transition times were consolidated and decreased.

Intervention Phase III

School 1. Following the full-day inservice, the two classrooms in which teachers received inservice plus feedback consultation continued to improve in academic responding time, while the two classrooms in which teachers received only inservice demonstrated academic responding times in the same general range as in the previous intervention phase (see Figure 2). The two inservice plus feedback classrooms increased total daily academic responding over 10 minutes per day (increasing from about 42 to 46 minutes in Phase II to 57 to 58 minutes in Phase III). The other inservice plus feedback classroom increased daily academic responding by 20 minutes from Phase II to one day in Phase III (increasing from about 25 minutes in Phase II to 33 to 47 minutes in Phase III).

The percent of academic responding in the total school day followed a similar pattern, with percentages increasing in the inservice plus feedback classrooms and remaining in the same range or decreasing in inservice only classrooms (see Figure 4). In one classroom receiving inservice plus consultation, total daily percent

of academic responding increased to 37%, compared to previous levels of 12% to 20%.

Total academic responding time during reading instruction continued to increase gradually in three of the four classrooms (see Figure 6). In one inservice plus feedback classroom, academic responding time during reading reached the highest levels seen at any phase in both schools; this class improved its level of reading academic responding time to about 36 to 43 minutes of the two-hour reading block, compared to previous levels of about 14 to 28 minutes.

Similarly, percent of academic responding during reading continued to increase in three classrooms, reaching 52% in two classrooms (see Figure 8). The two classrooms exhibiting 52% of reading time engaged in academic responding during Phase III exhibited baseline levels of 17% to 20% of reading time engaged in academic responding.

Teachers in the inservice plus feedback classrooms reported implementing interventions focused on improving academic responding time in reading instruction. Both instituted peer reading programs, and one, the primary grade teacher whose classroom reached the highest level of minutes of academic responding during reading, also increased the amount of time engaged in silent reading throughout the year. Both teachers provided specific activities in a specified order to be completed during independent work time within the reading period.

The teachers receiving only inservice reported continuing implementation of strategies used throughout the year. Both implemented methods to manage independent work time by providing students specific activities to be completed in a specific order.

School 2. Following this last intervention phase in this school, all classrooms demonstrated a decline from Phase II in total minutes of academic responding time, total percentage, reading minutes, and reading percentage (see Figure 3, 5, 7, and 9). However, by plotting a general trend line across all phases of intervention, a general positive trend of growth can be seen in both inservice only classrooms, while both inservice plus feedback classrooms demonstrated variability resulting in somewhat flat trend lines showing no clear growth. Although all classrooms did demonstrate increases in academic responding time at some point in the project, the two classrooms receiving inservice plus feedback reverted to about baseline levels after the final intervention phase. However, the inservice only classrooms ended at higher levels of academic responding than those demonstrated in baseline. One class increased from about 32 to 47 minutes in baseline to 62 to 69 in Phase III; the other class increased from about 20 to 24 minutes in baseline to 29 to 44 minutes in Phase III.

With regard to academic responding time during reading instruction, most classrooms did end at higher levels than those exhibited at baseline (see Figure 7). Minutes of academic responding during reading instruction more than doubled in one inservice only classroom, from about 6 to 8 minutes at baseline to 20 to 23 minutes at the end of the intervention project.

During Phase III, teachers reported several unusual occurrences that were believed to adversely affect academic responding time. Observations were disrupted during this period (April and May) due to

a snow day and school programs. Another teacher reported a light bulb from an overhead projector exploding on one day of observation. Additionally, less specific interventions were implemented during this phase than in previous phases. Reported interventions consisted of continuation of previous methods rather than introducing new methods as in previous phases.

Intervention Phase IV

School 1. Due to the earlier start of the intervention project in School 1, an additional phase of intervention was implemented in this school. This intervention consisted of a brief inservice before school in which teachers shared strategies that they had found enhanced student academic responding time. Following this intervention, three of the four classrooms demonstrated a continued increase in academic responding time (see Figure 2). The two classrooms receiving inservice plus feedback consultation more than doubled their daily academic responding time from baseline to Phase IV of intervention. One classroom improved from 34 minutes of academic responding to almost 70 minutes. The other classroom improved from about 18 minutes of academic responding at baseline to about 44 to 48 minutes in Phase IV.

Similarly, all classrooms increased their total daily percent of academic responding from baseline to the last phase of intervention (see Figure 4). Baseline percentages ranged from 12% to 21% of the instructional day engaged in academic responding; percentages in the final intervention phase ranged from 23% to 38% of the instructional day engaged in academic responding.

More variable results were seen for engaged time during reading instruction (see Figure 6). Teachers receiving inservice plus feedback consultation significantly increased their classrooms' minutes of academic responding during reading from baseline to Phase IV, while inservice only teachers' classrooms finished at about the same level as baseline or lower. Reading minutes of academic responding time increased from 15 to 38 minutes in one classroom, and increased from about 8 minutes to from 22 to 26 minutes in the other classroom.

Percent of time engaged in academic responding during reading instruction also increased dramatically in the two inservice plus feedback classrooms (see Figure 8). Increases to 46% in Phase IV from 17% at baseline were seen in one classroom, and increases from 33% to 36% in Phase IV from 11% at baseline were seen in the other classroom. For the inservice only classrooms, one went from 38% of the reading period engaged in academic responding at baseline to from 17% to 49% academic responding in Phase IV. The other inservice only classroom showed a moderate increase from 20% academic responding during reading at baseline to from 30% to 32% in Phase IV.

Interventions implemented during this phase generally consisted of continuation of previously implemented strategies. The two inservice plus feedback classrooms introduced the use of chalk slates during reading instruction for multiple responding in reading groups.

Discussion

Results of this intervention study of eight classrooms in two schools revealed that students' academic responding time could be

increased significantly through teachers' interventions. All classrooms increased the amount of academic responding during some phase of the intervention study, and there were several dramatic increases across time. In one classroom, total daily minutes of academic responding increased from 34 minutes at baseline to 70 minutes at the end of the last intervention phase. In another classroom, academic responding time during reading instruction increased from about 7 minutes at baseline to over 35 minutes after the second inservice, dropping slightly to around 20 minutes after the last inservice. Another classroom steadily improved from about 8 minutes of academic responding during reading to over 20 minutes at the end of the project.

Overall, the highest classroom totals in daily minutes of academic responding and percent of academic responding far exceeded levels exhibited during a previous IRLD study of engaged time in which academic responding time was documented without attempts to intervene. Data from this previous study (Graden et al., 1983a) revealed an average daily academic responding time in third and fourth grade classrooms of 45 minutes with a classroom high of 51 minutes. In the present study, the highest daily level of academic responding was 84 minutes. Similarly, the percent of academic responding time during the classroom instructional day was increased to a high of 46% in the current study compared to an average of 24% and a high of 28% in the previous study. These results demonstrate that teachers can have a significant impact on their students' academic responding time.

However, there was no clear trend indicating that classrooms in which teachers received specific feedback data on their students'

academic responding demonstrated greater gains than classrooms in which teachers received only inservice. While in one school (School 1), classrooms in which teachers received inservice plus feedback demonstrated greater growth in student academic responding than classrooms of inservice only teachers, the opposite pattern was exhibited in the other school (School 2). These results are similar to those of Berliner (1978) in which teachers participating in workshops exhibited greater classroom gains than teachers receiving feedback. One reasonable conclusion is that inservice alone can help teachers increase their students' active academic responding time in classrooms and that there is no clearly demonstrated need for additional observation data and specific feedback to teachers. Given that classroom observation and consultation are more expensive than general inservice presentations, it is a very positive finding to learn that inservice efforts alone can help teachers increase students' time engaged in academic responding.

The issue of raising students' academic responding time, although a seemingly worthwhile pursuit, is often a controversial area for teachers and raises several concerns. One concern is a differentiation between quantity of time, measured by academic responding time, and quality of time, which was not assessed in this study. Teachers reported that academic responding time could be increased by giving students "busy work" of numerous worksheets to complete, which most would agree is not quality instructional time. Yet, teachers in the intervention study recognized the importance of active academic responding and sought to use activities that enhanced

both quantity and quality of responding. This distinction between time-on-task and time "well spent" is eloquently described by Sirotnik (1983) who emphasizes the need for more active student responding in classrooms.

Another concern of teachers is the issue of optimal and excessive academic responding time. In other words, how much time is enough and how much is too much? While the question of an optimal amount of student academic responding cannot be answered by this research, reports by the one teacher whose classroom exhibited the highest daily minutes of academic responding indicate that academic responding time probably cannot be sustained at this high level. This teacher indicated that this high day was a tiring one for both the teacher and the students. Somewhere between baseline levels and the highest levels lies the level of academic responding at which students are active and challenged, yet not overburdened. Determining a range of optimal levels is an issue to be addressed by future research. It should be noted that in one previous study (Fisher et al., 1980), increases in academic engaged time were not associated with lower student motivation as some may have suspected.

Other issues were highlighted by this study. One consistent trend was that academic responding time generally was greater in higher grade levels. This phenomena also was indicated by a report by Rosenshine (1980) in which academic engaged time was 10 to 20 minutes higher in grade 5 than in grade 2. In the present study, academic responding time ranged from 10 to 30 minutes higher per day in grades 2 to 4 compared to grade 1. Among the explanations for this finding

are that students have longer attention spans in higher grades and thus are on task more of the time, that students are able to do more of the activities labeled as "academic responding" (e.g., reading) in higher grades, and that teachers provide more opportunities for active academic responding in higher grades by the activities they assign.

Finally, another question raised by the finding of growth of academic responding time over the course of interventions is whether academic responding increased naturally as the school year progressed or whether it increased as a result of interventions. This question cannot be resolved from the present study, and previous studies have not specifically addressed this issue. An interesting topic for future study is the extent to which students' academic responding varies across the typical school year.

The major conclusion of this study was the significant, positive impact that teachers can have on their students' active academic responding. It was demonstrated that time is in fact an "alterable" variable (Bloom, 1980), one that teachers can manipulate and control. Further, it was demonstrated that through a collaborative model of intervention between researchers and practitioners, research can be applied to yield significant and practical results in schools. While this research did not document students' achievement levels in addition to their growth in active academic responding time, the previously demonstrated positive relationship between academic responding and student achievement (cf. Borg, 1980) highlights the impor[illegible]of applying the research on academic responding toward the improvement of classroom practice.

Comments from a Participating Principal

Barbara Clobes Berquist

We are at a challenging point today in the field of education. In the elementary school, our enrollments are dropping, our budgets and staffs are being cut, the median age of the staff is rising, and our classes are growing larger. As a purported leader in the field of education, I find the above combinations of factors directly affecting myself as a building principal, the staff I work with, and most importantly, the consumer - our students.

The building I serve as an elementary principal was one of the two schools involved in the study of interventions to help teachers increase time their students spend in learning. While there were a number of findings or possible conclusions to be drawn from the study, I have my own set of conclusions after being directly involved in the study, the four intervention inservice presentations, and indeed, one inservice on this topic that I presented to the staff the spring before the study was proposed and started. These conclusions are merely a collection of observations and thoughts collected informally throughout the time frame of the study (one school year).

1. While all attendance at intervention inservices was optional, the response from the staff was overwhelming. Nearly every teacher attended every inservice (about 30 teachers), even though only the four staff involved in the study were required to attend.
2. Through our teacher evaluation system I evaluate one-third of the staff each year, with the cycle repeating every three

years. While using our specific "Teacher Performance Review System," I was able to see a specific gain in the knowledge base of teachers I observed as we progressed through the year and as the intervention inservices took place.

3. The staff learned from and shared with each other throughout the study. Team work and sharing of ideas and materials were the norm in the situation.
4. Teachers viewed the information as practical--they tried ideas, saw whether they worked or did not work, and improved on ideas and on teaching methods. An added bonus also was observed: student behavior was improved due to actively engaging students in the learning activity.
5. These particular intervention techniques did not add to curriculum, but suggested new thoughts and approaches to organizing and presenting current curriculum, which in turn improved the classroom process.
6. I would caution people interested in attempting intervention techniques against engaging students by more paper/pencil tasks, specifically called "busy work." Instead, I recommend using a variety of techniques that actively engage students and might be drawn from some of those mentioned here:
   a. Use "all group" responses such as thumbs up or thumbs down.
   b. Do a lot with vocal answers or choral answers, in group instruction time.
   c. Use chalk slates in your classroom to increase

opportunities for more pupils to respond rather than having students come to the board one at a time.

d. Try individual framed outlines (an outline partial fill-in the blank) to keep students active participants during lecture presentations.

e. The teacher and the student can try moving through paper/pencil tasks together, the teacher at an overhead or chalkboard, with the students working on an identical paper.

f. Creatively adapt existing reading workbooks, charts, and papers to avoid turn-taking and allow for "every pupil response."

As a principal, I need to know and respond to the staff as individuals. Some staff members could benefit students by increasing academic engaged time, while others placed such a burden on themselves, they needed to be cautioned to take time to smell the roses and share a laugh or two with their students. I found the study, and my involvement with inservices on intervention techniques to increase time students spend in learning, to be a very rewarding experience. As a principal, I have found that I can make a difference through inservicing the staff. The teachers can truly make a difference in student learning, behavior, and therefore success by specifically working to increase students' academic responding time.

A Participating Principal's Observations About Inservice in Increasing Student Academic Responding Time

Charles W. Burnside

The inservice provided to teachers during the intervention study to increase students' academic responding time has had a positive effect on the teachers involved in the study and on those teachers with whom they are associated. It seems that the training has made the entire staff more aware of the importance of being on task and thus more conscientious about the use of time. Academic responding time has proven to be a very simple, yet important variable to control.

However, there have been concerns expressed by teachers about the negative aspects of a study which equates the quantity of academic responding time with the quality of instruction. Teachers indicated that increasing responding time was no guarantee of the appropriateness of the learning activities. They described ways that academic responding time could be increased that would concurrently decrease the quality of instruction. An overuse of worksheets was the most commonly mentioned example of potential abuse of increasing academic responding time without noting the quality of instruction. The study, they noted, did not measure the educational relevance of the tasks being performed. Teachers cautioned that academic responding time is only one aspect of quality instruction and that we need more than one measure to identify a good learning situation. Yet, it was believed that increasing academic responding time was an important first step in enhancing effective instruction.

The involvement of our staff in inservice training on increasing responding time has had a generalized positive effect on most of our teachers' attitudes about their ability to control learning. Inservice presentations, although on a volunteer basis, were attended by most staff members and were highly rated. Informally, teachers began to share instructional strategies in the teachers' lounge. Several staff members took responsibility in presenting ideas during the inservice presentation, and teachers worked together to develop materials they could use to increase student academic responding time. Also, a committee was formed at the end of the school year to continue the application of the concept of academic responding time in our school next year. The focus on academic responding has been particularly helpful for those teachers who have been observed under our Teacher Performance Review System (a district-wide system of teacher evaluation), since many of our measures relate to Time on Task or Academic Engaged Time activities. Even considering teacher concerns, training in the methods to increase academic responding time seems to hold promise for improving learning for students.

References

Anderson, L. M., Evertson, C. M., & Brophy, J. E. An experimental study of effective teaching in first grade reading groups. Elementary School Journal, 1979, 79(4), 1, 193-223.

Bailey, W. J., & Morrill, L. Improving instruction through research-based staff development. Educational Technology, 1980, 20, 41-43.

Bergan, J. Behavioral consultation. Columbus, OH: Charles E. Merrill, 1977.

Bergan, J. R., & Schnaps, A. A model for instructional consultation. In J. L. Alpert & J. Meyers (Ed.), Training in consultation. Springfield, IL: Charles Thomas, in press.

Berliner, D. C. Changing academic learning time: Clinical interventions in four classrooms. In C. W. Fisher (Ed.), Selected findings from phase III-B of the Beginning Teacher Evaluation Study. San Francisco: Far West Laboratory for Educational Research, 1978. (ERIC Document Reproduction Service No. ED 160-839)

Berliner, D. On improving teacher effectiveness: A conversation with David Berliner. Educational Leadership, October 1982, 12-15.

Bloom, B. The new direction in educational research: Alterable variables. Phi Delta Kappan, 1980, 61, 382-385.

Borg, W. Time and school learning. In C. Denham & A. Lieberman (Eds.). Time to learn. Washington, D.C.: National Institute of Education, 1980.

Denham, C., & Lieberman, A. (Eds.). Time to learn. Washington, D.C.: National Institute of Education, 1980.

Fisher, C., Berliner, D., Filby, N., Marliave, R., Cahen, L., & Dishaw, M. Teaching behaviors, academic learning time, and student achievement: An overview. In C. Denham & A. Lieberman (Eds.), Time to learn. Washington, D.C.: National Institute of Education, 1980.

Fisher, C. W., Marliave, R., & Filby, N. N. Improving teaching by increasing "academic learning time." Educational Leadership, 1979, 37, 52-54.

Good, T. L. Teacher effectiveness in the elementary school. Journal of Teacher Education, 1979, 30, 52-64.

Good, T. L., & Grouws, D. Teaching effects: A process-product study in 4th grade mathematics classrooms. Journal of Teacher Education, 1977, 28, 49-54.

Graden, J., Thurlow, M. L., & Ysseldyke, J. E. Academic engaged time and its relationship to learning: A review of the literature (Monograph No. 17). Minneapolis: University of Minnesota, Institute for Research on Learning Disabilities, 1982.

Graden, J., Thurlow, M., & Ysseldyke, J. Instructional ecology and academic responding time for students at three levels of teacher perceived behavioral competence. Journal of Experimental Child Psychology, 1983, 36, 241-256. (a)

Graden, J., Thurlow, M., & Ysseldyke, J. When are students most academically engaged? Students' academic responding time in different instructional ecologies (Research Report No. 119). Minneapolis: University of Minnesota, Institute for Research on Learning Disabilities, 1983. (b)

Greenwood, C. R., Delquadri, J., & Hall, R. V. Code for instructional structure and student academic response: CISSAR. Kansas City, Kan.: Juniper Gardens Children's Project, Bureau of Child Research, University of Kansas, 1978.

Greenwood, C. R., Delquadri, J. C., Stanley, S. O., Terry, B., & Hall, R. V. Process-product study of relationships among instructional ecology, student response, and academic achievement. Unpublished manuscript, Juniper Gardens Children's Project, University of Kansas, 1981.

Hall, R., Delquadri, J., Greenwood, C., & Thurstone, L. The importance of opportunity to respond in children's academic success. In E. B. Edgar, N. G. Haring, J. R. Jenkins, & C. G. Pions (Eds.), Mentally handicapped children: Education and training. Baltimore: University Park Press, 1982.

Hunter, M. Teach more-faster! El Segundo, CA: TIP Publications, 1979.

Hunter, M. Reinforcement: Theory into practice. El Segundo, CA: TIP Publications, 1980.

Muir, R. A teacher implements instructional changes using the BTES framework. In C. Denham & A. Lieberman (Eds.), Time to learn. Washington, D. C.: National Institute of Education, 1980.

Noli, P. A principal implements BTES. In C. Denham & A. Lieberman (Eds.), Time to learn. Washington, D.C.: National Institute of Education, 1980.

Rosenshine, B. How time is spent in elementary classrooms. In C. Denham & A. Lieberman (Eds.), Time to learn. Washington, D.C.: National Institute for Education, 1980.

Ruff, F. Instructional variables and student achievement in reading and mathematics: A synthesis of recent product-process research. Unpublished manuscript, Research for Better Schools, Philadelphia, 1978.

Sirotnik, K. A. What you see is what you get -- Consistency, persistency, and mediocrity in classrooms. Harvard Educational Review, 1983, 53, 16-31.

Stanley, S. O., & Greenwood, C. R. CISSAR: Code for instructional structure and student academic response: Observer's manual. Kansas City, KS: Juniper Gardens Children's Project, University of Kansas, 1980.

Thurlow, M., Graden, J., Greener, J., & Ysseldyke, J. LD and non-LD students' opportunities to learn. Learning Disability Quarterly, 1983, 6, 172-183.

Footnotes

The intervention and observation study was part of an extensive project that could not have been completed without the cooperation and assistance of numerous individuals. Foremost among these was the administrative support of Orlin Bonstrom, Director of Special Services, Anoka-Hennepin Independent School District No. 11, the collaboration in inservice and feedback of Janice Geigle and Gail Maslowski (LD teachers), and the participating teachers and students in District 11). Special appreciation is extended to Martha Thurlow for editorial assistance, Audrey Thurlow for typing, and Nancy Valentine for completing figures. Also important to the successful completion of the study were the observers: Barbara Flykt, Eileen Mevissen, Donna Miller, Judith Rygwall, Yvonne Shafranski, Wendy Studer, and Geraldine Webster.

[1]The CISSAR category of "teacher position" was renamed "teacher location," but code definitions were unchanged.

Table 1

CISSAR Event Areas and Specific Events Coded[a]

Event Area	Specific Events Coded
Activity - type of instruction being provided/established by teacher	R - Reading M - Math S - Spelling H - Handwriting L - Language Sc - Science Ss - Social Studies Ac - Arts/Crafts Ft - Free Time Bm - Class Business/ Management Tn - Transition Ct Can't Tell
Task - curriculum task or verbal instruction mode in which student is expected to engage	Rr - Readers Wb - Workbooks Ws - Worksheets Pp - Paper and Pencil Ll - Listen to Teacher Lecture Om - Other Media Tsd - Teacher-Student Discussion Fp - Fetch/Put Away
Teaching Structure - physical arrangement of student in class	Eg - Entire group Sg - Small group I - Individual
Teacher Position - location of teacher	IF - In Front of Class AD - At Desk AS - Among Students O - Out of Room S - Side B - Back
Teacher Activity - response of teacher to target student	NR - No Response T - Teaching OT - Other Talk A - Approval D - Disapproval
Student Response - behavior in which student is engaged	W - Writing G - Playing Academic Game RA - Reading Aloud RS - Silent Reading TA - Talking About Academics ANQ - Answers Academic Question ASK - Asks Academic Question AT - Passive Response RH - Raising Hand LM - Looking for Materials M - Moves to New Academic Station PA - Play Appropriate DI - Disruption PI - Play Inappropriate IT - Inappropriate Task TNA - Talking About Non-academics IL - Inappropriate Locale LA - Look Around SST - Self-Stimulation

[a]Based on Stanley & Greenwood's (1980) CISSAR: Code for instructional structure and student academic response: Observer's manual. Within the Student Response Event Area, the AT event, which was designated as "Attending" by Stanley and Greenwood, was renamed as "Passive Response" in the present investigation to avoid inappropriate connotations of the responses included within that event.

Table 2

Summary of Reliabilities Calculated During the Study[a]

Reliability	Mean	Range
Categories		
Activity	100.0	--
Task	100.0	--
Structure	100.0	--
Teacher Location	99.0	96 - 100
Teacher Activity	94.9	82 - 100
Student Response	91.4	69 - 100
Total	95.8	91 - 100

[a]All reliabilities are expressed as percentages.

	Baseline	Intervention 1			Intervention 2			Intervention 3			Intervention 4		
		Inservice	Feedback	Observe	Inservice	Feedback	Observe	Inservice	Feedback	Observe	Inservice	Feedback	Observe
School 1	10-25-82	10-26-82 (45 min)	11-1-82	11-1-82 to 11-9-82	11-30-82 (45 min)	11-15-82 12-2-82	12-3-82 to 12-8-82	1-24-83 (1 day)	1-27-83	2-7-83 to 3-2-83	3-8-83 (45 min)	3-9-83	3-15-83 to 4-12-83
School 2	11-3-82 to 11-17-82	11-19-82 (45 min)	12-2-82	11-30-82 to 12-10-82	1-24-83 (1 day)	1-27-83	2-24-83 to 3-3-83	3-10-83 (45 min)	3-22-83	3-22-83 to 4-20-83	--	--	--

Figure 1. Timeline of Academic Engaged Time Interventions

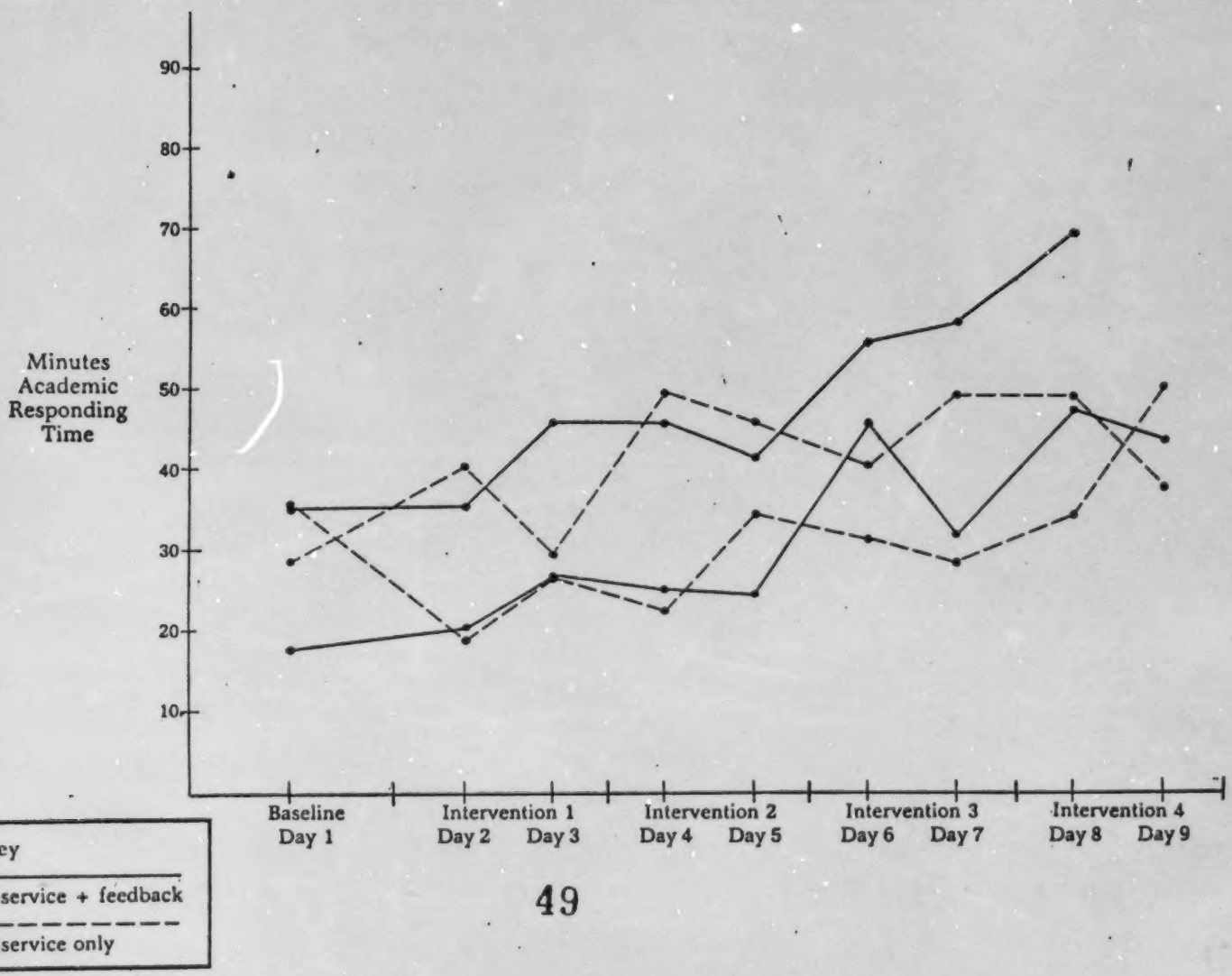

Figure 2. Total Daily Academic Responding Time in Four Classrooms (School 1)

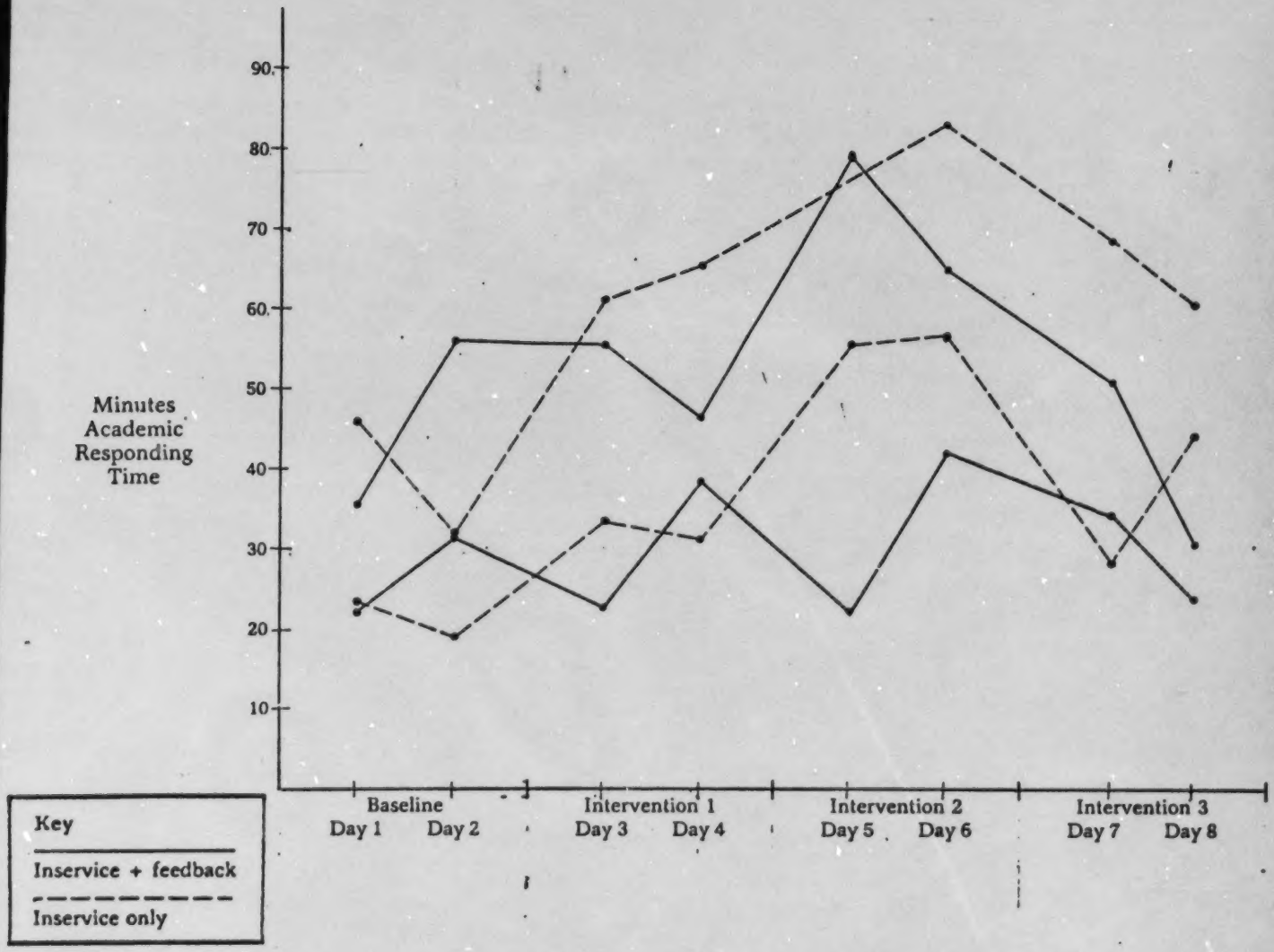

Figure 3. Total Daily Academic Responding Time in Four Classrooms (School 2)

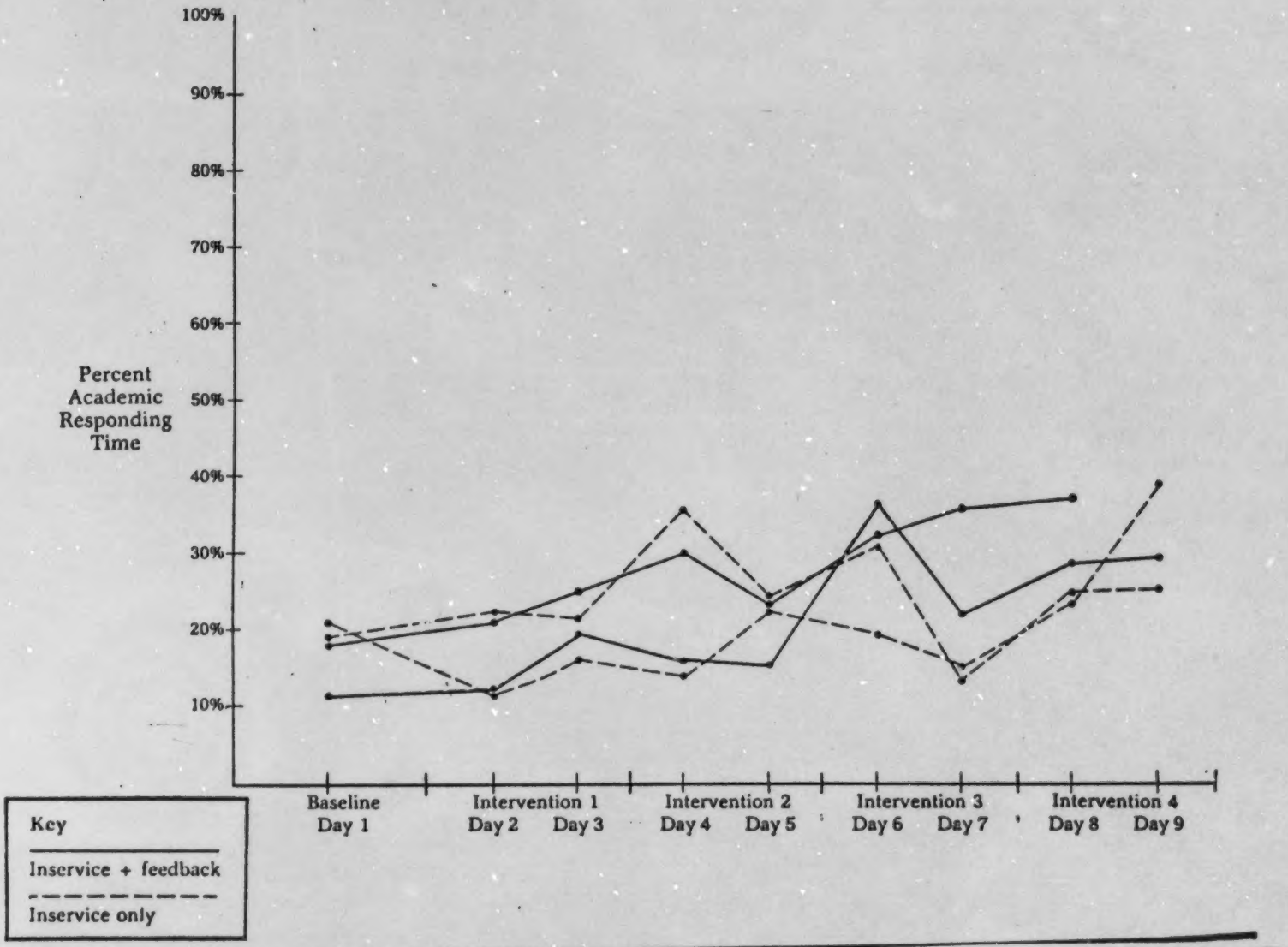

Figure 4. Percent Academic Responding Time in the Total School Day in Four Classrooms (School 1)

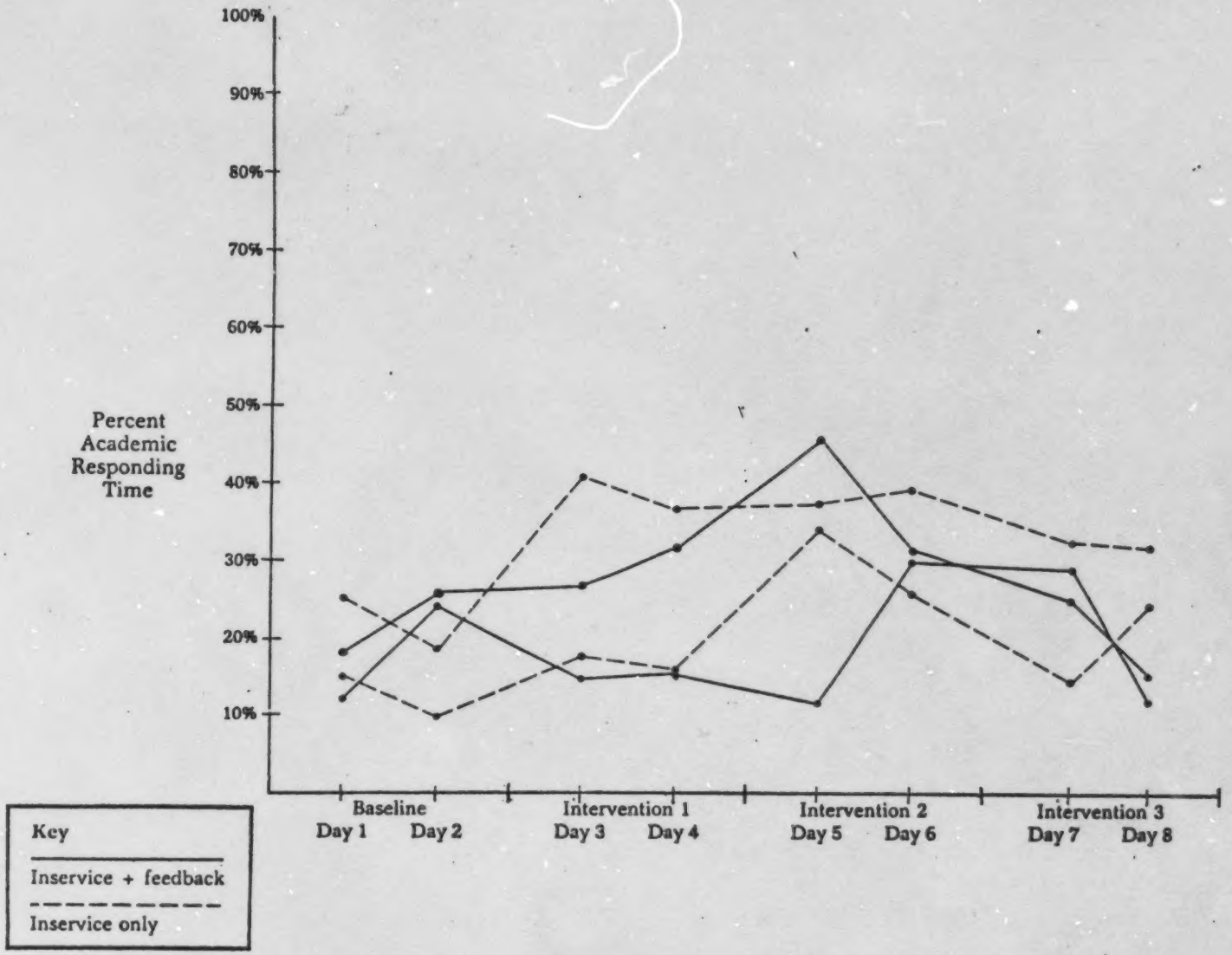

Figure 5. Percent Academic Responding Time in the Total School Day in Four Classrooms (School 2)

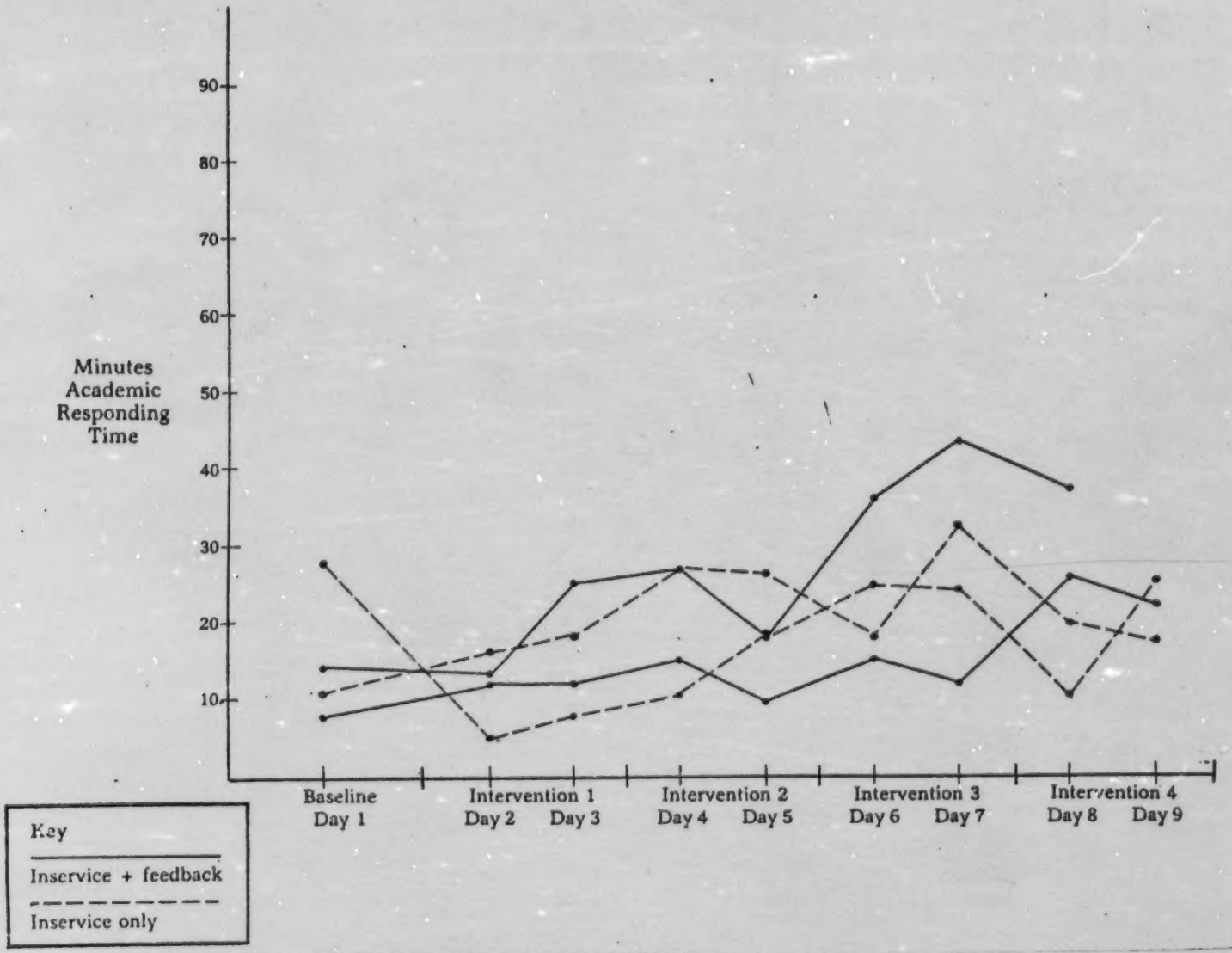

Figure 6. Total Academic Responding Time During Reading Instruction in Four Classrooms (School 1)

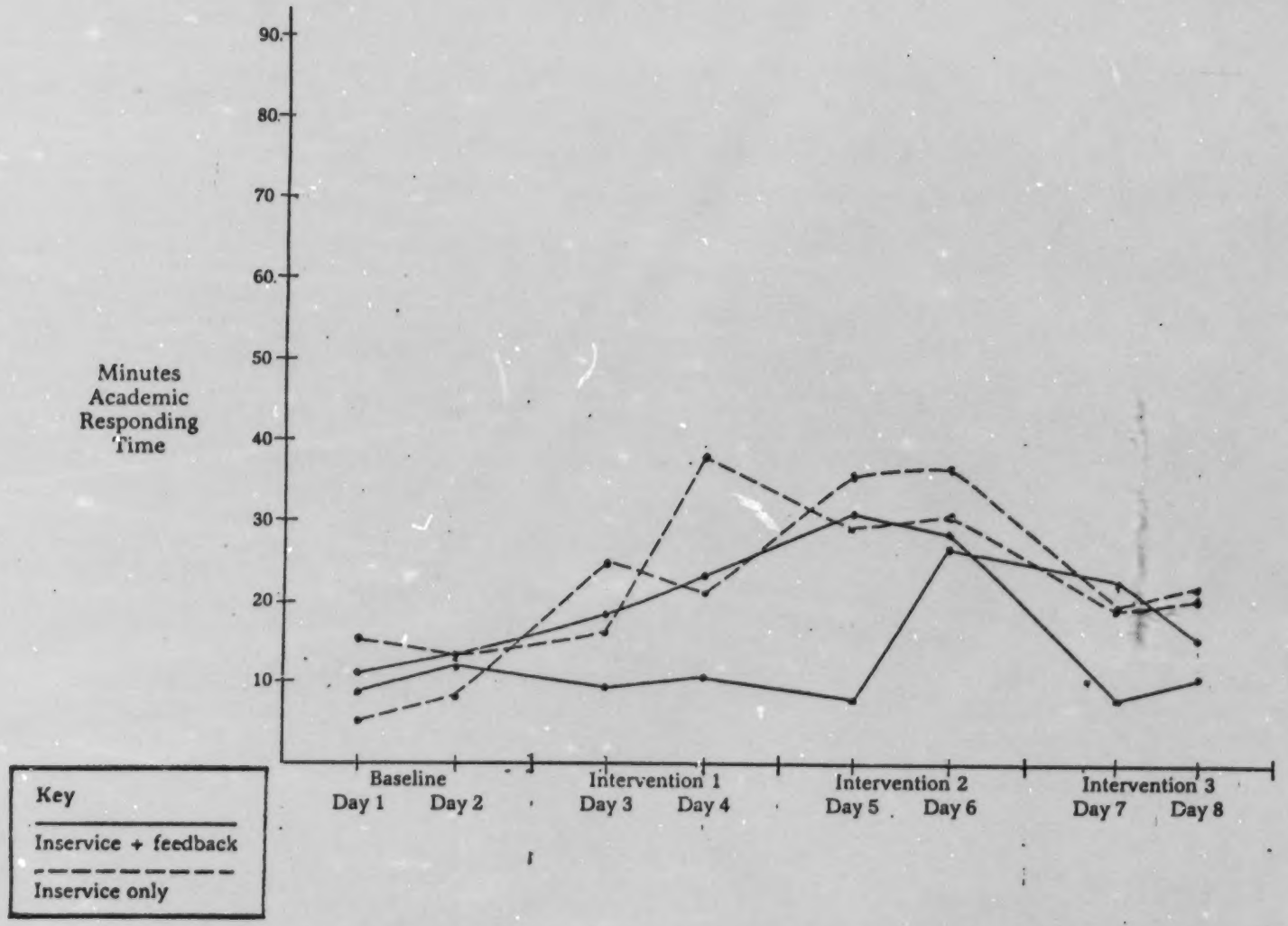

Figure 7. Total Academic Responding Time During Reading Instruction in Four Classrooms (School 2)

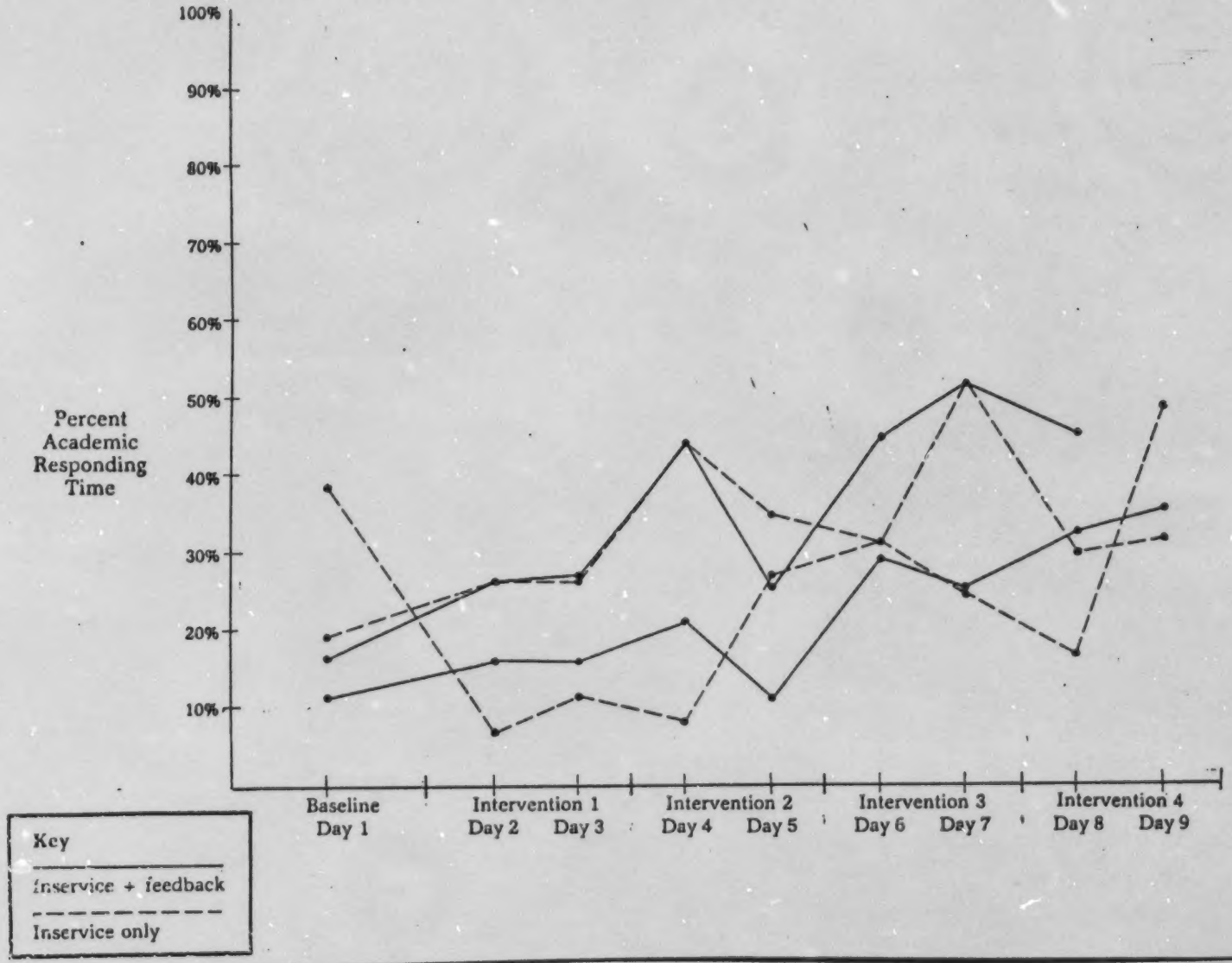

Figure 8. Percent Academic Responding Time During Reading Instruction in Four Classrooms (School 1)

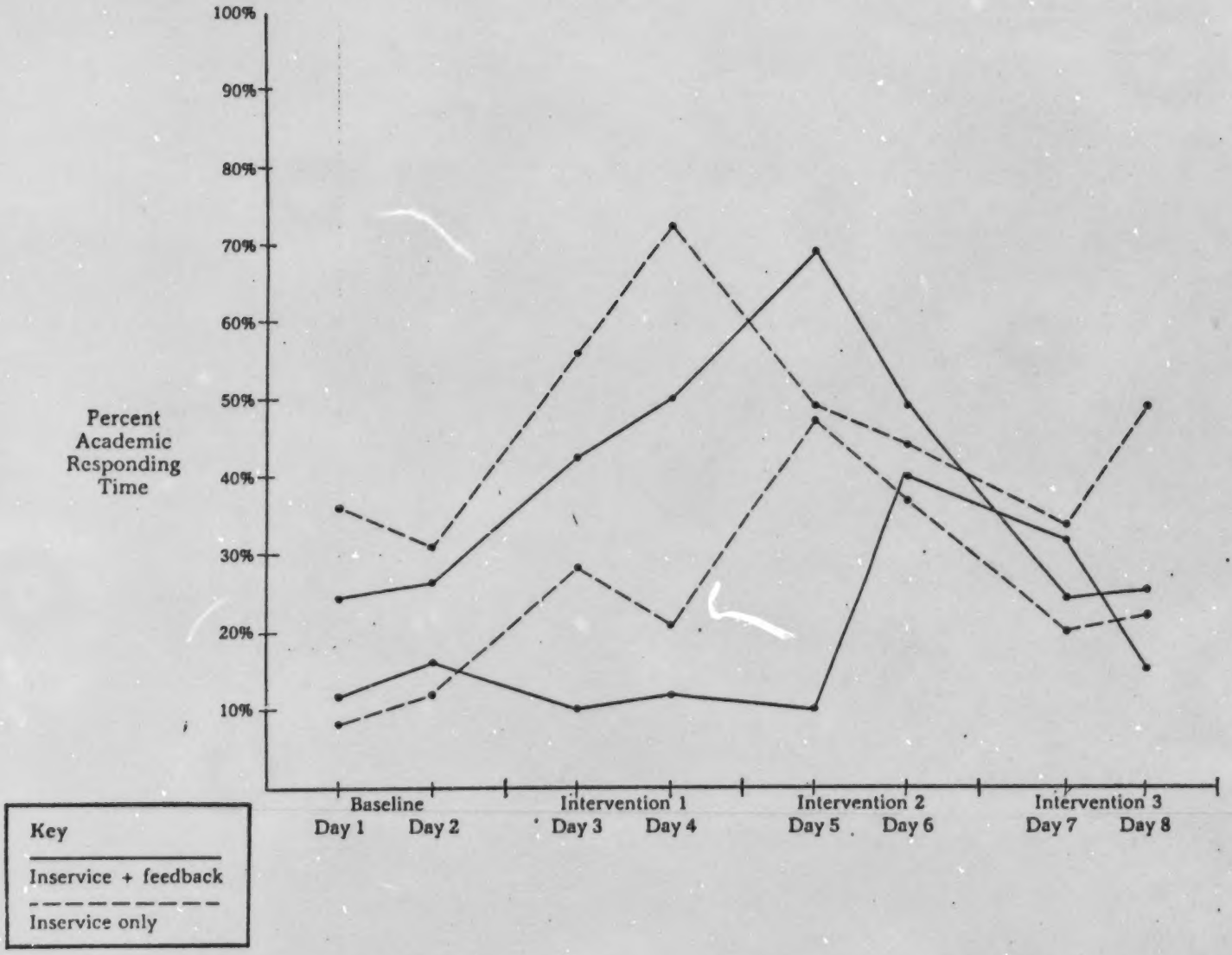

Figure 9. Percent Academic Responding Time During Reading Instruction in Four Classrooms (School 2)

APPENDIX A

Examples of Handouts

INSTRUCTIONAL STRATEGIES TO INCREASE ACADEMIC ENGAGED TIME

1. Increase opportunities for every pupil to respond:

   - group completion of worksheets during direct instruction (e.g., read words aloud, circle words, check words, number words, put X in front of words, syllabification, find sounds, find letters — can use same strategies for other subject areas such as math)
   - trimodal instruction
   - pattern for calling on students that enables all students to respond and keeps their attention (e.g., random pattern, don't direct questions at specific students before asking question)

2. Increase use of unison responding techniques:

   - choral reading
   - silent reading
   - echoic reading (partner reading)
   - repeated reading
   - chalk slates
   - acetate sheets
   - pocket charts (e.g., letters, phonics)
   - choral responding (e.g., math facts, counting, recitation)
   - framed outline
   - Cuisenaire rods
   - responding cards (e.g., alphabet, numerals)
   - signal systems for group responding

3. Increase practice for mastery/fluency:

   - drill
   - silent reading
   - oral reading
   - writing

4. Provide intensive periods of direct instruction at appropriate difficulty level with follow-up practice for mastery (independent seatwork at easy difficulty level):

   - use strategies of unison responding and "every pupil responds" during direct instruction time to keep students engaged
   - use management strategies to keep students engaged during independent seatwork/practice

5. Provide opportunities for interactive on-task behavior of students:

   - answering and asking questions
   - discussing
   - small group discussion/cooperative grouping

6. Increase opportunities to engage in reading:

   - sustained silent reading time (e.g., SQUIRT)
   - peer reading (e.g., cross-age)
   - read along with tape recording

7. Use supplemental materials/supplemental personnel:

   - tape recordings
   - language masters
   - academic games
   - flash cards
   - parent volunteers
   - aides
   - peer/cross-age helpers

Prepared by Janet Graden in cooperation with Barb Berquist, Tom Gaetz, Jan Geigle, and Gail Masloski

MANAGEMENT STRATEGIES TO INCREASE ACADEMIC ENGAGED TIME

1. Plan and schedule independent seatwork time to keep students on-task:

   - structure independent work time to give specific, limited choices
   - provide clear instructions before seatwork begins
   - independent seatwork should be practice for mastery (i.e., at easy difficulty level)
   - system for monitoring progress (e.g., work folders)

2. Decrease "wait" time (i.e., time that students have to wait between activities or for help):

   a. Systems to receive quick feedback during entire group independent seatwork time:
      - sign-up to see teacher
      - scheduled time with teacher
      - "bakery" system (e.g., take numbers)
      - signal system (e.g., "help" card on desk)
      - correcting table (with teacher, peer corrector, or self-correcting keys)

   b. Systems to receive quick feedback during time that some students are engaged in seatwork while teacher is with another group:

      - set rules regarding interruptions to teacher
      - use assigned peer helper/corrector
      - use aide/parent volunteer as monitor
      - self-correcting keys at table
      - provide clear, structured choices
      - provide follow-up activities to keep students busy after work completion
      - use timers or other signal systems to structure independent work time into work blocks

3. Provide planned free time as scheduled breaks to intensive periods of direct instruction and independent practice (everyone needs a break from engaged periods of instruction and drill).

4. Decrease transition time (at beginning and end of day, between activities, before and after lunch and recess):

   - consolidate transition times - provide scheduled transitions between periods of instruction, practice, free time, and other activities
   - schedule students coming and going during planned transition times
   - set limits on transition times to provide quick, smooth transitions
   - use systems for distributing, collecting materials and papers
   - use teacher signal system to alert students to end of transition time and beginning of activity
   - consolidate break times (e.g., bathroom breaks)

5. Reduce interruptions to scheduled instructional time:

   - limit P.A. announcements to set time (e.g., at beginning of day)
   - set policies regarding interrupting class time (e.g., phone calls, visitors, other staff)
   - don't interrupt students who are engaged - set up a system for them to signal for assistance

6. Be aware of classroom design, teacher location relative to students, and other features of the environment that affects students' engaged time:

   - reduce distractions in work area(s)
   - distinguish between work, independent activity, and play areas
   - teacher should be positioned to enable monitoring of all students

7. Use management/organizational systems to reduce time spent in managing class business:

   - work charts
   - student folders
   - mailboxes
   - system for keeping track of assignments
   - system for distributing and collecting papers
   - system for student desk organization
   - assignment sheets

8. Use supplemental personnel for management activities:

   - parent volunteers as monitors/helpers
   - parent volunteers as aides in preparing materials, correcting papers
   - student aides/peer helpers, peer correctors

Prepared by Janet Graden in cooperation with Jan Geigle and Gail Masloski

APPENDIX B

Examples of Observation Feedback Summary Data

Observation Feedback

==========

Class # 110 Day #1 (Pre-In-service)

9:00-9:10 Start of Day

9:10-11:02 Reading

Academic Responding Time	12%
Task Management	65%
Inappropriate Responding	23%

11:02-11:06 Transition to Handwriting

Academic Responding Time	0%
Task Management	100%
Inappropriate Responding	0%

11:07-11:34 Handwriting

Academic Responding Time	33%
Task Management	35%
Inappropriate Responding	31%

11:34-12:13 Lunch

12:14-12:30 Science (Health)

Academic Responding Time	12%
Task Management	65%
Inappropriate Responding	23%

12:30 Transition to Art Activity

Academic Responding Time	0%
Task Management	50%
Inappropriate Responding	50%

12:31-1:03 Art Activity

Academic Responding Time	0%
Task Management	71%
Inappropriate Responding	29%

1:03 Transition to Math

Academic Responding Time	0%
Task Management	67%
Inappropriate Responding	33%

1:40-2:02 Math

Academic Responding Time	19%
Task Management	63%
Inappropriate Responding	17%

2:02-2:06 Transition to Snack-Quiet Time

Academic Responding Time	5%
Task Management	53%
Inappropriate Responding	41%

2:07-2:14 Business Management

Academic Responding Time	0%
Task Management	67%
Inappropriate Responding	33%

2:40-2:48 Science

Academic Responding Time	0%
Task Management	78%
Inappropriate Responding	22%

2:48-2:51 Transition

Academic Responding Time	0%
Task Management	100%
Inappropriate Responding	0%

2:52-2:59 Social Studies

Academic Responding Time	12%
Task Management	79%
Inappropriate Responding	9%

3:00-3:06 Transition to End of Day

Academic Responding Time	0%
Task Management	52%
Inappropriate Responding	48%

JG/at/Ds6

Observation Feedback

Class #106 Day #4 (Post In-service and Post-Feedback)

9:20 - 9:24 Business Management

Academic Responding Time	0%
Task Management	78%
Inappropriate Responding	22%

9:24 - 9:33 Exercises

Academic Responding Time	2%
Task Management	98%
Inappropriate Responding	0%

9:33 - 9:45 Spelling

Academic Responding Time	24%
Task Management	58%
Inappropriate Responding	18%

9:45 - 9:53 Handwriting

Academic Responding Time	36%
Task Management	44%
Inappropriate Responding	19%

9:53 - 9:56 Transition

Academic Responding Time	2%
Task Management	59%
Inappropriate Responding	39%

9:56 - 10:29 Breaks

10:29 - 20:36 Transition to Reading

10:36 - 11:50 Reading

Academic Responding Time	44%
Task Management	44%
Inappropriate Responding	12%

11:50 - 11:53 Transition

Academic Responding Time	33%
Task Management	50%
Inappropriate Responding	17%

11:53 - 12:00 Business Management

Academic Responding Time	11%
Task Management	81%
Inappropriate Responding	8%

12:00 - 2:00 Lunch, Breaks, Library, Recess

2:00 - 2:02 Transition

Academic Responding Time	67%
Task Management	33%
Inappropriate Responding	0%

2:02 - 2:30 Math

Academic Responding Time	28%
Task Management	53%
Inappropriate Responding	18%

2:30- 3:00 Social Studies

Academic Responding Time	30%
Task Management	60%
Inappropriate Responding	10%

JG/at/Ds4

APPENDIX C

Examples of Completed Forms Summarizing

Feedback Consultation Meetings

Teacher Feedback
On Engaged Time Observation

Teacher _____ Date 11/15/82

Observation Data Discussed:

- inappropriate responding time (felt to be too high)
- discussed that inappropriate responding is incompatible with academic responding (decided to focus on academic)
- Reading engaged time (higher at beginning, drops over period.
- Small group reading time - low engaged time during independent work time
- Effect of disruptions / interruptions on engaged time

Instructional Areas for Intervention:

- Reading (small group work)
- Independent work time in reading

Intervention Plan(s) to be Implemented:

- Meet with Jan to follow-up on ways to organise small group independent reading time (structured independen activities, silent reading - have write 3 wds. that they know in book, how to structure independent practice - use peer corrector / helper, assign practice activities that can perform independently, go through difficult sheets together)
- Cross-age peer reading - possibly 1 day/wk.
- Strategies for multiple responding in reading (e.g. choral reading, group completion of worksheets, chalkslates)

Teacher Feedback
On Engaged Time Observation

==========

Teacher _____ Date 12-2-82

Observation Data Discussed:

- academic responding time during reading
- task management time - entire day
- transition time

Instructional Areas for Intervention:

- increase academic responding time in reading
- decrease task management time in reading
- reduce transition / task management time during entire day

Intervention Plan(s) to be Implemented:

- techniques for allowing every pupil to respond (e.g. acetate sheets, chalk slates, group completion of worksheets, pocket charts,
- structure independent work time to keep on task and reduce interruptions to teacher (e.g. peer helper, structured independent activities, practice for mastery, set limits on interrupts
- structured transition, free time, and bathroom breaks
- management strategies (with Gail)

APPENDIX D

Examples of Completed Forms Documenting

Teachers' Interventions

Academic Responding Time Interventions

==========

Class #108 Date Feb. 23

Please briefly summarize any strategies to increase academic responding time you have implemented in your classroom as a result of the in-service presentations.

aide assisted those who had questions about seatwork

implemented a 5-step Workshop for my Reading students to use after their assigned written work was completed

- it seemed to motivate some to work faster so they could do the Workshop
- those going to Title I don't have much time to use it

I asked other school personnel not interrupt our class while I was teaching but some children still knocked on the with something to give or help a child.

children read aloud new stories with me

echoic reading during afternoon reading time

Math - worked together on sample

D-2

Academic Responding Time Interventions

==========

Class _____ Date March 22, 1983

Please briefly summarize any strategies to increase academic responding time you have implemented in your classroom as a result of the in-service presentations.

Have something for the class to do - handwriting or another assignment from previous day to finish - in the 9:00 - 9:10 time period before our special.

Have only one organized bathroom break - just before lunch - and the rest of the time have a bathroom pass.

On this day the students had a set of worksheets to fill in to cover several pages in the social studies text.

Academic Responding Time Interventions

Class _____ Date * April 6

Please briefly summarize any strategies to increase academic responding time you have implemented in your classroom as a result of the in-service presentations.

Use of group games in which each child has a response game board on which to provide answers, etc.

Use of workshop in which any student may use activities during non-seatwork time instead of grouping use.

Providing definite instruction for what to do when you're thru with assignments

Group writing response seatwork

Use of markers

* Monitor left 10:35 to 10:50

2 monitors in room for 20 min. or so . . . /

APPENDIX E

Tables of Percent of Academic Responding Times in Individual Classes

Table 1

Academic Responding Time

Class #105

In-service Only

Academic Responding Time	Baseline		Intervention 1		Intervention 2		Intervention 3	
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8
Total %	16%	10%	18%	16%	35%	28%	15%	24%
Reading %	8%	12%	28%	21%	47%	37%	20%	22%
Math %	20%	14%	9%	20%	30%	20%	24%	-
Spelling %	-	-	-	-	-	-	-	-
Handwriting %	30%	48%	35%	46%	51%	48%	-	42%
Social Studies %	14%	-	7%	-	7%	15%	5%	-
Science %	-	-	5%	5%	23%	-	1%	-
Language %	44%	4%	5%	-	42%	39%	16%	26%
Total Minutes	23.7	19.8	33.8	31.8	57.7	58.7	28.5	44.3
Reading Minutes	5.8	8.3	24.7	21.2	35.5	35.8	19.5	22.5

Table 2

Academic Responding Time

Class #109

In-service Only

Academic Responding Time	Baseline	Intervention 1		Intervention 2		Intervention 3		Intervention 4	
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9
Total %	21%	11%	17%	14%	23%	19%	15%	23%	38%
Reading %	38%	7%	11%	8%	27%	31%	25%	17%	49%
Math %	25%	18%	37%	29%	36%	11%	17%	40%	50%
Spelling %	-	-	-	-	-	-	-	-	-
Handwriting %	-	38%	44%	40%	35%	36%	-	48%	-
Social Studies %	-	6%	-	-	8%	2%	2%	-	-
Science %	-	8%	3%	1%	-	-	-	-	27%
Language %	0%	-	28%	3%	-	-	-	27%	57%
Total Minutes	34.2	18.7	27.5	22.3	34.5	31.5	28.3	34.2	50.2
Reading Minutes	27.3	5.0	8.3	10.8	17.8	24.5	33.3	10.3	25.5

Table 3

Academic Responding Time

Class #117

In-service Only

Academic Responding Time	Baseline		Intervention 1		Intervention 2		Intervention 3	
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8
Total %	26%	19%	41%	37%	38%	40%	34%	32%
Reading %	37%	31%	56%	73%	49%	44%	34%	49%
Math %	35%	35%	43%	25%	33%	37%	36%	28%
Spelling %	45%	-	38%	34%	-	-	-	30%
Handwriting %	-	23%	-	-	67%	60%	-	67%
Social Studies %	-	5%	28%	27%	32%	36%	37%	29%
Science %	19%	9%	-	-	-	-	-	-
Language %	2%	1%	24%	5%	33%	31%	20%	29%
Total Minutes	47.2	31.8	61.8	55.7	79.2	83.7	68.7	61.5
Reading Minutes	14.7	12.3	16.7	37.3	29.0	30.3	18.3	21.3

Table 4

Academic Responding Time

Class #131

In-service Only

Academic Responding Time	Baseline	Intervention 1		Intervention 2		Intervention 3		Intervention 4	
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9
Total %	18%	22%	21%	36%	24%	30%	31%	25%	26%
Reading %	20%	27%	27%	44%	35%	31%	52%	30%	32%
Math %	45%	32%	43%	40%	32%	30%	43%	44%	37%
Spelling %	34%	42%	-	-	-	36%	-	-	-
Handwriting %	42%	-	-	-	-	-	-	-	-
Social Studies %	-	-	9%	-	-	-	18%	-	16%
Science %	16%	9%	-	-	-	-	-	27%	-
Language	-	-	-	-	21%	27%	-	17%	-
Total Minutes	28.2	40.5	29.5	49.3	47.7	40.8	49.5	49.3	37.3
Reading Minutes	11.3	15.8	18.0	27.7	24.5	18.3	32.5	19.5	17.2

Table 5

Academic Responding Time

Class #106

In-service Plus Feedback

Academic Responding Time	Baseline	Intervention 1		Intervention 2		Intervention 3		Intervention 4	
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9
Total %	18%	21%	25%	30%	23%	32%	36%	37%	-
Reading %	17%	27%	28%	44%	26%	45%	52%	46%	-
Math %	20%	33%	42%	28%	22%	64%	29%	47%	-
Spelling %	42%	34%	49%	24%	45%	32%	57%	47%	
Handwriting %	51%	14%	33%	36%	34%	58%	44%	36%	-
Social Studies %	-	18%	-	30%	16%	1%	100%	-	-
Science %	-	-	3%	-	-	-	3%	-	-
Language %	-	-	-	-	50%	27%	-	-	-
Total Minutes	34.0	35.0	46.3	46.0	41.5	56.7	58.2	69.7	-
Reading Minutes	14.5	14.2	25.2	27.5	17.7	36.0	41.3	37.5	-

Table 6

Academic Responding Time

Class #108

In-service Plus Feedback

Academic Responding Time	Baseline	Intervention 1		Intervention 2		Intervention 3		Intervention 4	
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9
Total %	12%	12%	20%	17%	16%	37%	22%	28%	29%
Reading %	11%	16%	16%	21%	11%	29%	26%	33%	36%
Math %	20%	14%	30%	32%	28%	58%	38%	34%	30%
Spelling %	-	-	-	-	-	-	-	-	-
Handwriting %	36%	31%	35%	19%	48%	57%	34%	47%	40%
Social Studies %	-	3%	-	1%	0%	-	-	-	20%
Science %	-	-	-	-	-	24%	24%	-	-
Language %	5%	6%	27%	-	40%	35%	-	28%	52%
Total Minutes	17.8	20.3	27.7	25.3	24.3	46.7	32.7	47.8	43.8
Reading Minutes	7.7	12.0	12.0	15.2	9.8	15.2	12.5	26.0	22.0

Table 7

Academic Responding Time

Class #110

In-service plus Feedback

Academic Responding Time	Baseline		Intervention 1		Intervention 2		Intervention 3	
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8
Total %	12%	25%	15%	16%	12%	30%	29%	13%
Reading %	12%	17%	10%	12%	10%	40%	32%	15%
Math %	19%	45%	44%	31%	23%	40%	29%	13%
Spelling %	-	-	-	-	-	-	-	-
Handwriting %	33%	61%	55%	6%	45%	41%	40%	26%
Social Studies %	12%	8%	-	40%	2%	10%	-	-
Science %	12%	37%	3%	38%	2%	50%	12%	5%
Language %	-	-	0%	-	-	-	-	46%
Total Minutes	22.3	31.5	23.0	28.5	22.8	42.7	34.2	24.0
Reading Minutes	9.3	12.5	9.7	10.5	8.3	27.0	22.2	14.8

Table 8

Academic Responding Time

Class #119

In-service plus Feedback

Academic Responding Time	Baseline		Intervention 1		Intervention 2		Intervention 3	
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8
Total %	18%	26%	27%	33%	45%	32%	25%	15%
Reading %	24%	27%	43%	50%	69%	49%	24%	25%
Math %	21%	27%	40%	22%	41%	42%	36%	16%
Spelling %	31%	25%	38%	56%	-	-	31%	39%
Handwriting %	30%	48%	-	6%	50%	44%	-	-
Social Studies %	8%	31%	19%	56%	50%	22%	24%	32%
Science	1%	10%	-	-	38%	22%	27%	1%
Language %	22%	20%	41%	-	8%	14%	21%	7%
Total Minutes	35.2	56.8	55.8	47.5	79.0	65.0	51.3	30.7
Reading Minutes	10.8	13.0	18.8	23.7	30.7	28.3	9.5	10.8

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Wesson, C., Mirkin, P., & Deno, S. Teachers' use of self instructional materials for learning procedures for developing and monitoring progress on IEP goals (Research Report No. 63). January, 1982.

Fuchs, L., Wesson, C., Tindal, G., Mirkin, P., & Deno, S. Instructional changes, student performance, and teacher preferences: The effects of specific measurement and evaluation procedures (Research Report No. 64). January, 1982.

Potter, M., & Mirkin, P. Instructional planning and implementation practices of elementary and secondary resource room teachers: Is there a difference? (Research Report No. 65). January, 1982.

Thurlow, M. L., & Ysseldyke, J. E. Teachers' beliefs about LD students (Research Report No. 66). January, 1982.

Graden, J., Thurlow, M. L., & Ysseldyke, J. E. Academic engaged time and its relationship to learning: A review of the literature (Monograph No. 17). January, 1982.

King, R., Wesson, C., & Deno, S. Direct and frequent measurement of student performance: Does it take too much time? (Research Report No. 67). February, 1982.

Greener, J. W., & Thurlow, M. L. Teacher opinions about professional education training programs (Research Report No. 68). March, 1982.

Algozzine, B., & Ysseldyke, J. Learning disabilities as a subset of school failure: The oversophistication of a concept (Research Report No. 69). March, 1982.

Fuchs, D., Zern, D. S., & Fuchs, L. S. A microanalysis of participant behavior in familiar and unfamiliar test conditions (Research Report No. 70). March, 1982.

Shinn, M. R., Ysseldyke, J., Deno, S., & Tindal, G. A comparison of psychometric and functional differences between students labeled learning disabled and low achieving (Research Report No. 71). March, 1982.

Thurlow, M. L. Graden, J., Greener, J. W., & Ysseldyke, J. E. Academic responding time for LD and non-LD students (Research Report No. 72). April, 1982.

Graden, J., Thurlow, M., & Ysseldyke, J. Instructional ecology and academic responding time for students at three levels of teacher-perceived behavioral competence (Research Report No. 73). April, 1982.

Algozzine, B., Ysseldyke, J., & Christenson, S. The influence of teachers' tolerances for specific kinds of behaviors on their ratings of a third grade student (Research Report No. 74). April, 1982.

Wesson, C., Deno, S., & Mirkin, P. Research on developing and monitoring progress on IEP goals: Current findings and implications for practice (Monograph No. 18). April, 1982.

Mirkin, P., Marston, D., & Deno, S. L. Direct and repeated measurement of academic skills: An alternative to traditional screening, referral, and identification of learning disabled students (Research Report No. 75). May, 1982.

Algozzine, B., Ysseldyke, J., Christenson, S., & Thurlow, M. Teachers' intervention choices for children exhibiting different behaviors in school (Research Report No. 76). June, 1982.

Tucker, J., Stevens, L. J., & Ysseldyke, J. E. Learning disabilities: The experts speak out (Research Report No. 77). June, 1982.

Thurlow, M. L., Ysseldyke, J. E., Graden, J., Greener, J. W., & Mecklenberg, C. Academic responding time for LD students receiving different levels of special education services (Research Report No. 78). June, 1982.

Graden, J. L., Thurlow, M. L., Ysseldyke, J. E., & Algozzine, B. Instructional ecology and academic responding time for students in different reading groups (Research Report No. 79). July, 1982.

Mirkin, P. K., & Potter, M. L. A survey of program planning and implementation practices of LD teachers (Research Report No. 80). July, 1982.

Fuchs, L. S., Fuchs, D., & Warren, L. M. Special education practice in evaluating student progress toward goals (Research Report No. 81). July, 1982.

Kuehnle, K., Deno, S. L., & Mirkin, P. K. Behavioral measurement of social adjustment: What behaviors? What setting? (Research Report No. 82). July, 1982.

Fuchs, D., Dailey, Ann Madsen, & Fuchs, L. S. Examiner familiarity and the relation between qualitative and quantitative indices of expressive language (Research Report No. 83). July, 1982.

Videen, J., Deno, S., & Marston, D. Correct word sequences: A valid indicator of proficiency in written expression (Research Report No. 84). July, 1982.

Potter, M. L. Application of a decision theory model to eligibility and classification decisions in special education (Research Report No. 85). July, 1982.

Greener, J. E., Thurlow, M. L., Graden, J. L., & Ysseldyke, J. E. The educational environment and students' responding times as a function of students' teacher-perceived academic competence (Research Report No. 86). August, 1982.

Deno, S., Marston, D., Mirkin, P., Lowry, L., Sindelar, P., & Jenkins, J. The use of standard tasks to measure achievement in reading, spelling, and written expression: A normative and developmental study (Research Report No. 87). August, 1982.

Skiba, R., Wesson, C., & Deno, S. L. The effects of training teachers in the use of formative evaluation in reading: An experimental-control comparison (Research Report No. 88). September, 1982.

Marston, D., Tindal, G., & Deno, S. L. Eligibility for learning disability services: A direct and repeated measurement approach (Research Report No. 89). September, 1982.

Thurlow, M. L., Ysseldyke, J. E., & Graden, J. L. LD students' active academic responding in regular and resource classrooms (Research Report No. 90). September, 1982.

Ysseldyke, J. E., Christenson, S., Pianta, R., Thurlow, M. L., & Algozzine, B. An analysis of current practice in referring students for psychoeducational evaluation: Implications for change (Research Report No. 91). October, 1982.

Ysseldyke, J. E., Algozzine, B., & Epps, S. A logical and empirical analysis of current practices in classifying students as handicapped (Research Report No. 92). October, 1982.

Tindal, G., Marston, D., Deno, S. L., & Germann, G. Curriculum differences in direct repeated measures of reading (Research Report No. 93). October, 1982.

Fuchs, L.S., Deno, S. L., & Marston, D. Use of aggregation to improve the reliability of simple direct measures of academic performance (Research Report No. 94). October, 1982.

Ysseldyke, J. E., Thurlow, M. L., Mecklenburg, C., & Graden, J. Observed changes in instruction and student responding as a function of referral and special education placement (Research Report No. 95). October, 1982.

Fuchs, L. S., Deno, S. L., & Mirkin, P. K. Effects of frequent curriculum-based measurement and evaluation on student achievement and knowledge of performance: An experimental study (Research Report No. 96). November, 1982.

Fuchs, L. S., Deno, S. L., & Mirkin, P. K. Direct and frequent measurement and evaluation: Effects on instruction and estimates of student progress (Research Report No. 97). November, 1982.

Tindal, G., Wesson, C., Germann, G., Deno, S. L., & Mirkin, P. K. The Pine County model for special education delivery: A data-based system (Monograph No. 19). November, 1982.

Epps, S., Ysseldyke, J. E., & Algozzine, B. An analysis of the conceptual framework underlying definitions of learning disabilities (Research Report No. 98). November, 1982.

Epps, S., Ysseldyke, J. E., & Algozzine, B. Public-policy implications of different definitions of learning disabilities (Research Report No. 99). November, 1982.

Ysseldyke, J. E., Thurlow, M. L., Graden, J. L., Wesson, C., Deno, S. L., & Algozzine, B. Generalizations from five years of research on assessment and decision making (Research Report No. 100). November, 1982.

Marston, D., & Deno, S. L. Measuring academic progress of students with learning difficulties: A comparison of the semi-logarithmic chart and equal interval graph paper (Research Report No. 101). November, 1982.

Beattie, S., Grise, P., & Algozzine, B. Effects of test modifications on minimum competency test performance of third grade learning disabled students (Research Report No. 102). December, 1982

Algozzine, B., Ysseldyke, J. E., & Christenson, S. An analysis of the incidence of special class placement: The masses are burgeoning (Research Report No. 103). December, 1982.

Marston, D., Tindal, G., & Deno, S. L. Predictive efficiency of direct, repeated measurement: An analysis of cost and accuracy in classification (Research Report No. 104). December, 1982.

Wesson, C., Deno, S., Mirkin, P., Sevcik, B., Skiba, R., King, R., Tindal, G., & Maruyama, G. Teaching structure and student achievement effects of curriculum-based measurement: A causal (structural) analysis (Research Report No. 105). December, 1982.

Mirkin, P. K., Fuchs, L. S., & Deno, S. L. (Eds.). Considerations for designing a continuous evaluation system: An integrative review (Monograph No. 20). December, 1982.

Marston, D., & Deno, S. L. Implementation of direct and repeated measurement in the school setting (Research Report No. 106). December, 1982.

Deno, S. L., King, R., Skiba, R., Sevcik, B., & Wesson, C. The structure of instruction rating scale (SIRS): Development and technical characteristics (Research Report No. 107). January, 1983.

Thurlow, M. L., Ysseldyke, J. E., & Casey, A. Criteria for identifying LD students: Definitional problems exemplified (Research Report No. 108). January, 1983.

Tindal, G., Marston, D., & Deno, S. L. The reliability of direct and repeated measurement (Research Report No. 109). February, 1983.

Fuchs, D., Fuchs, L. S., Dailey, A. M., & Power, M. H. Effects of pre-test contact with experienced and inexperienced examiners on handicapped children's performance (Research Report No. 110). February, 1983

King, R. P., Deno, S., Mirkin, P., & Wesson, C. The effects of training teachers in the use of formative evaluation in reading: An experimental-control comparison (Research Report No. 111). February, 1983.

Tindal, G., Deno, S. L., & Ysseldyke, J. E. Visual analysis of time series data: Factors of influence and level of reliability (Research Report No. 112). March, 1983.

Tindal, G, Shinn, M., Fuchs, L., Fuchs, D., Deno, S., & Germann, G. The technical adequacy of a basal reading series mastery test (Research Report No. 113). April, 1983.

Sevcik, B., Skiba, R., Tindal, G., King, R., Wesson, C., Mirkin, P., & Deno, S. Communication of IEP goals and student progress among parents, regular classroom teachers, and administrators using systematic formative evaluation (Research Report No. 114). April, 1983.

Wesson, C. Two student self-management techniques applied to data-based program modification (Research Report No. 115). April, 1983.

Wesson, C., Skiba, R., Sevcik, B., King, R., Tindal, G., Mirkin, P., & Deno, S. The impact of the structure of instruction and the use of technically adequate instructional data on reading improvement (Research Report No. 116). May, 1983.

Wesson, C. Teacher vs student selection of instructional activities (Research Report No. 117). May, 1983.

Tindal, G., & Deno, S. Factors influencing the agreement between visual and statistical analyses of time series data (Research Report No. 118). June, 1983.

Skiba, R. S. Classroom behavior management: A review of the literature (Monograph No. 21), June, 1983.

Graden, J. L., Thurlow, M. L., & Ysseldyke, J. E. When are students most academically engaged? Academic responding time in different instructional ecologies (Research Report No. 119). June, 1983.

Fuchs, L. S., Deno, S. L., & Roettger, A. The effect of alternative data-utilization rules on spelling achievement: An n of 1 study (Research Report No. 120). June, 1983.

Skiba, R., Sevcik, B., Wesson, C., King, R., & Deno, S. The non-effect of process-product variables in resource classrooms (Research Report No. 121). June, 1983.

Fuchs, L. Tindal, G., Shinn, M., Fuchs, D., Deno, S., & Germann, G. Technical adequacy of basal readers' mastery tests: The Ginn 720 series (Research Report No. 122). June, 1983.

Tindal, G., Germann, G., Marston, D., & Deno, S. The effectiveness of special education: A direct measurement approach (Research Report No. 123). June, 1983.

Sevcik, B., Skiba, R., Tindal, G., King, R., Wesson, C., Mirkin, P., & Deno, S. Curriculum-based measurement: Effects on instruction, teacher estimates of student progress, and student knowledge of performance (Research Report No. 124). July, 1983.

Skiba, R., Marston, D., Wesson, C., Sevcik, B., & Deno, S. L. Characteristics of the time-series data collected through curriculum-based reading measurement (Research Report No. 125). July, 1983.

Ysseldyke, J., Christenson, S., Graden, J., & Hill, D. Practical implications of research on referral and opportunity to learn (Monograph No. 22). July, 1983.

Marston, D., Deno, S., & Tindal, G. A comparison of standardized achievement tests and direct measurement techniques in measuring pupil progress (Research Report No. 126). July, 1983.

Fuchs, D., Fuchs, L. S., Tindal, G., & Deno, S. L. Variability of performance: A "signature" characteristic of learning disabled children? (Research Report No. 127). July, 1983.

Tindal, G., Fuchs, L., Fuchs, D., Shinn, M., Deno, S., & Germann, G. The technical adequacy of a basal series mastery test: The Scott-Foresman reading program (Research Report No. 128). July, 1983.

Fuchs, L. S., Fuchs, D., & Deno, S. L. The nature of inaccuracy among readability formulas (Research Report No. 129). July, 1983.

Fuchs, L., Tindal, G., Fuchs, D., Shinn, M., Deno, S., & Germann, G The technical adequacy of a basal reading mastery test: The Holt basic reading series (Research Report No. 130). July, 1983.

Ysseldyke, J. E., Christenson, S., Algozzine, B., & Thurlow, M. L. Classroom teachers' attributions for students exhibiting different behaviors (Research Report No. 131). July, 1983.

Tindal, G., Germann, G., & Deno, S. Descriptive research on the Pine County norms: A compilation of findings (Research Report No. 132). July, 1983.

Skiba, R. J. The relationship between classroom management strategies and student misbehaviors (Research Report No. 133). July, 1983.

Fuchs, D., Fuchs, L. S., Power, M. H., & Dailey, A. M. Systematic bias in the assessment of handicapped children (Research Report No. 134). July, 1983.

Fuchs, D., & Fuchs, L. S. The importance of scorer bias to handicapped preschoolers' stronger performance with familiar examiners (Research Report No. 135). July, 1983.

Foster, G. G., Ysseldyke, J. E., Casey, A., & Thurlow, M. L. The congruence between reason for referral and placement outcome (Research Report No. 136). August, 1983.

Potter, M. L. Instructional decision-making practices of teachers of learning disabled students (Research Report No. 137). September, 1983.

Skiba, R., & Deno, S. A correlational analysis of the statistical properties of time-series data and their relationship to student achievement in resource classrooms (Research Report No. 138). September, 1983.

Potter, M. L. Decision research and its application to educational settings: A literature review (Monograph No. 23). September, 1983.

Graden, J., Berquist, B., & Burnside, C. W. Helping teachers increase the time their students spend in learning (Research Report No. 139). September, 1983.

Graden, J., Casey, A., & Bonstrom, O. Prereferral interventions: Effects on referral rates and teacher attitudes (Research Report No. 140). September, 1983.

Thurlow, M. L., Christenson, S., & Ysseldyke, J. E. Referral research: An integrative summary of findings (Research Report No. 141). September, 1983.

Ysseldyke, J. E., & Thurlow, M. L. Identification/classification research: An integrative summary of findings (Research Report No. 142). September, 1983.

Thurlow, M. L., & Ysseldyke, J. E. Instructional intervention research: An integrative summary of findings (Research Report No. 143). September, 1983.

Ysseldyke, J. E., Thurlow, M. L., & Christenson, S. Evaluation research: An integrative summary of findings (Research Report No. 144). September, 1983.